

THE IRON AGE

A Review of the Hardware, Iron and Metal Trades.

Published every Thursday Morning by David Williams, Nos. 96, 98, 100 & 102 Reade St., New York.


Vol. LIII: No. 20.

New York, Thursday, May 17 1894.

\$4.50 a Year, including Postage.
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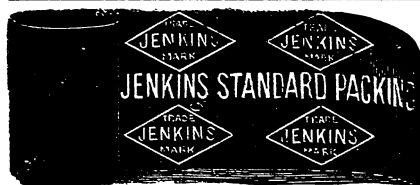
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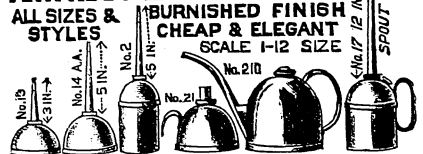
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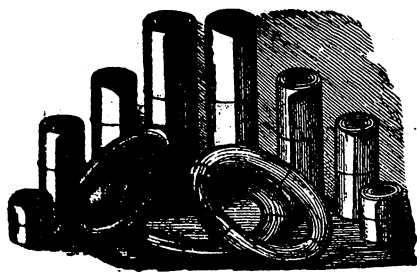
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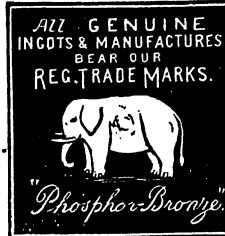
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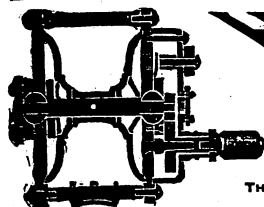
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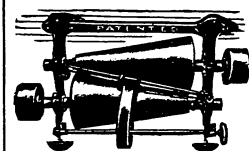
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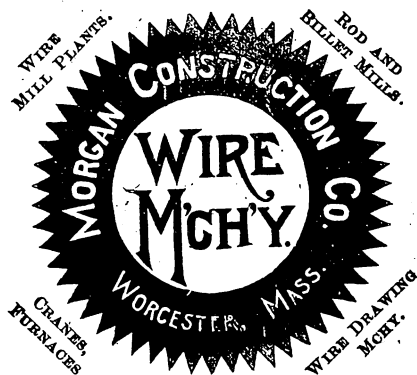
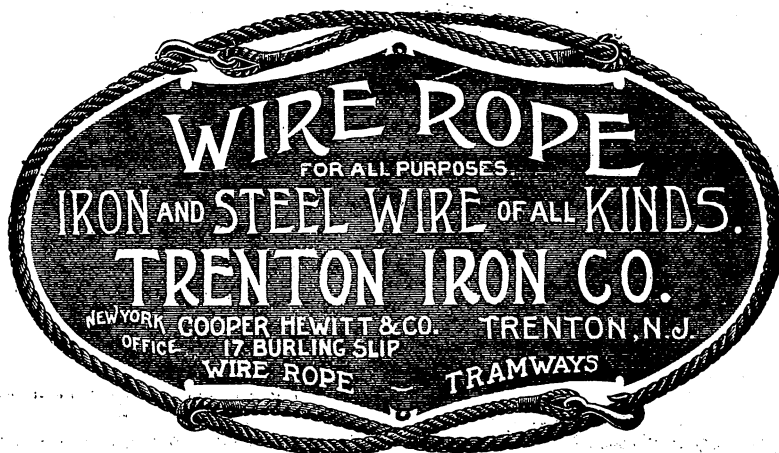
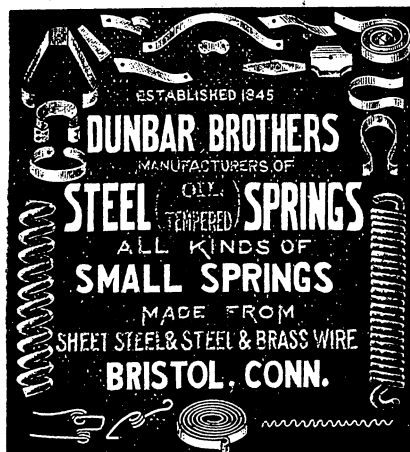
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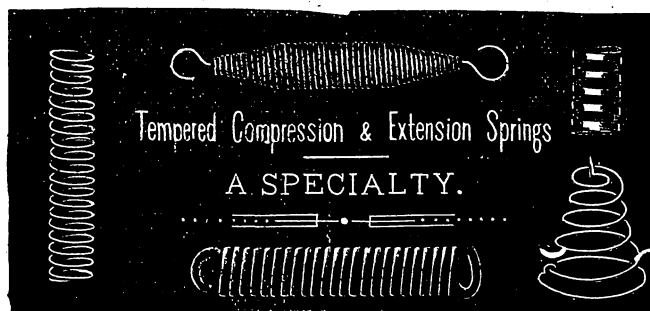
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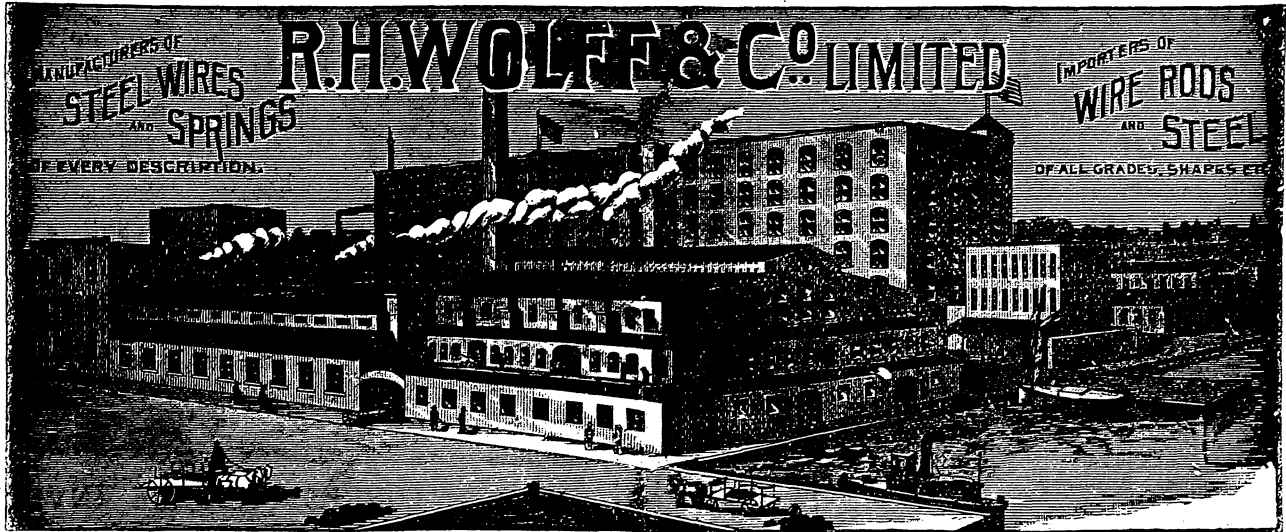
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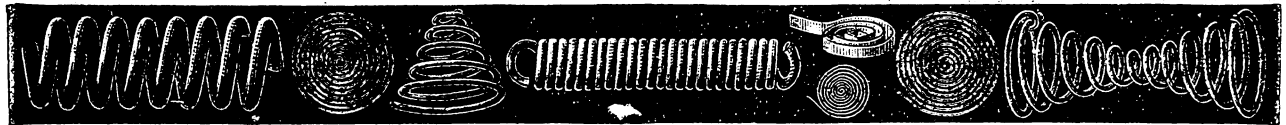
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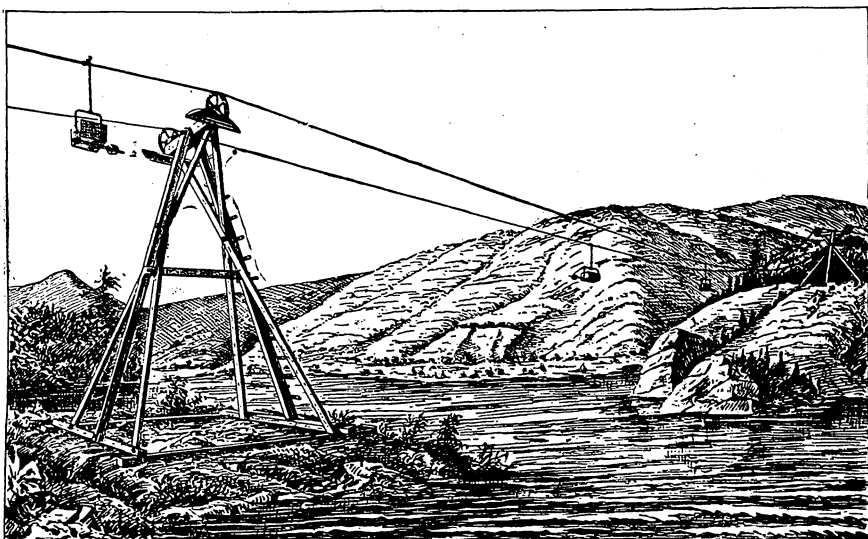


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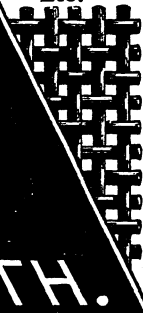
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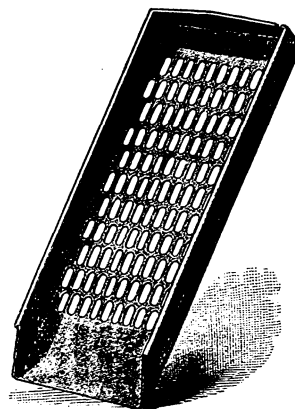
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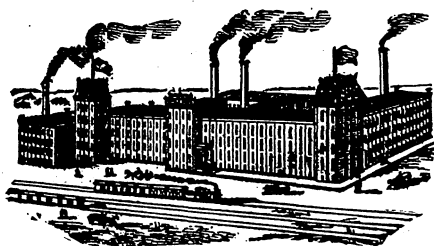


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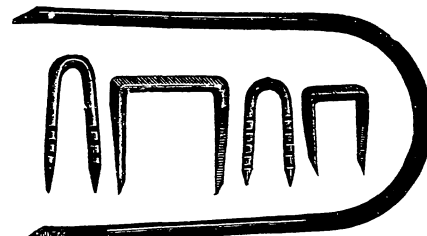
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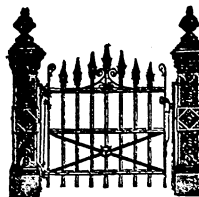
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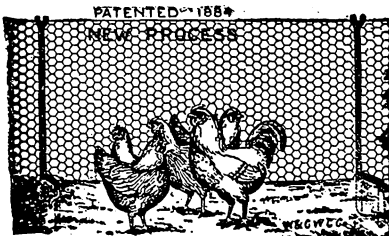
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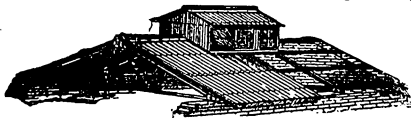
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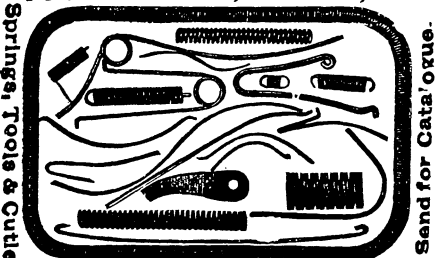


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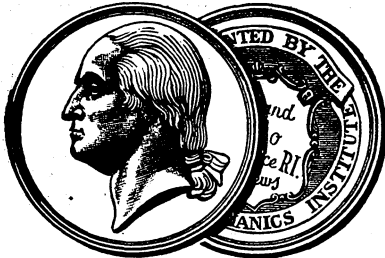
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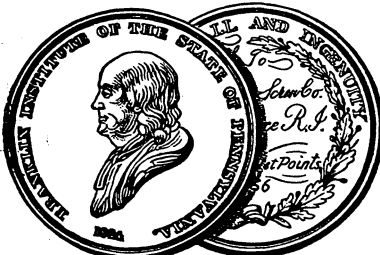
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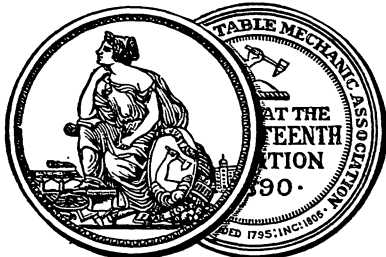
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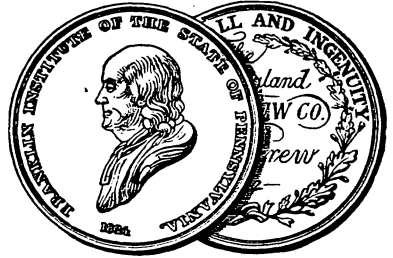
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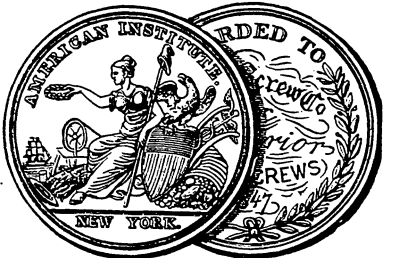
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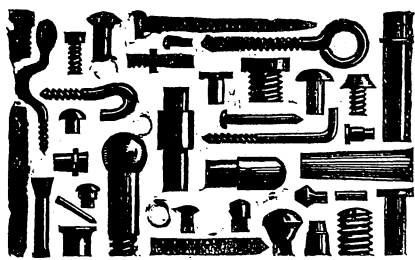
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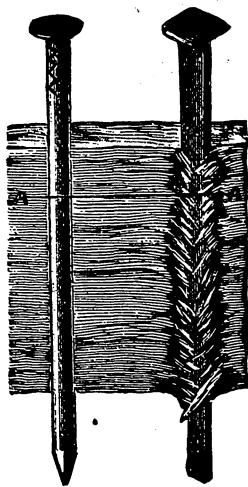
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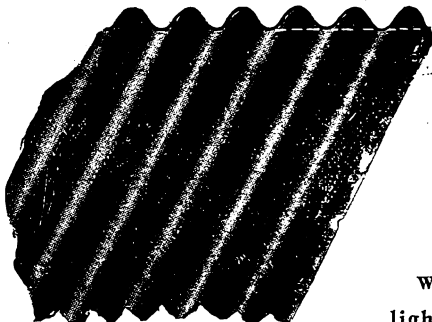
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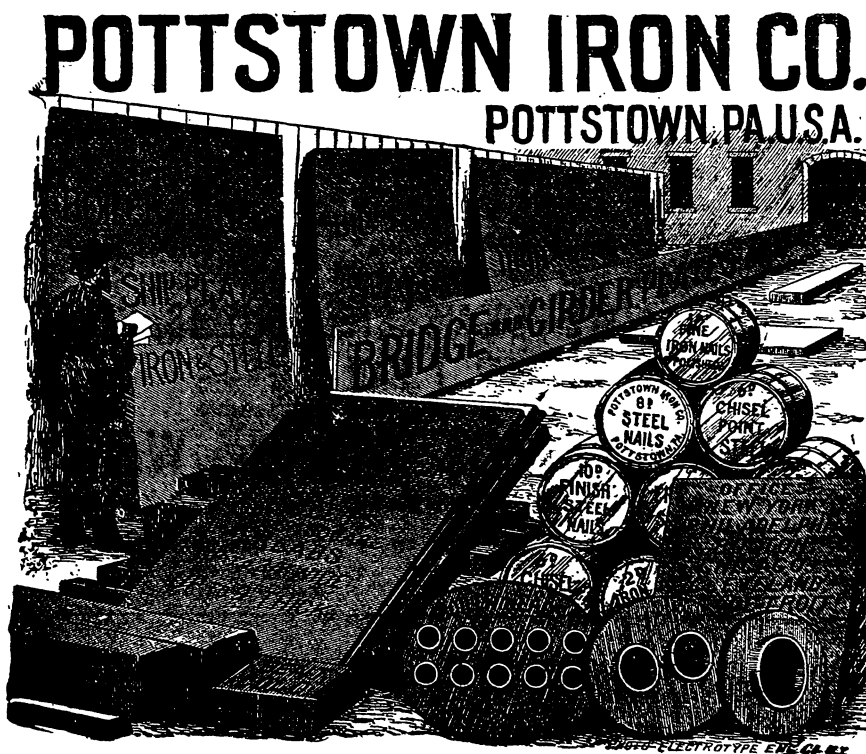
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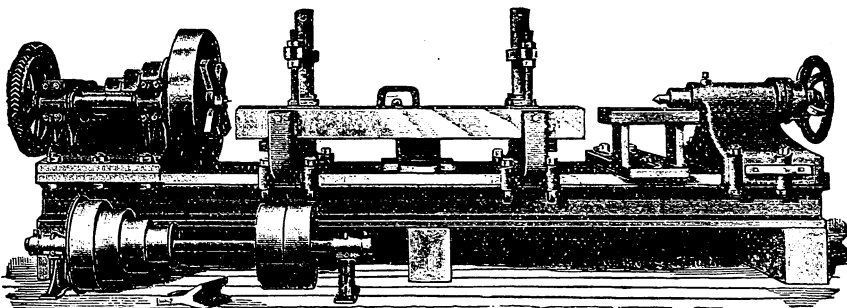
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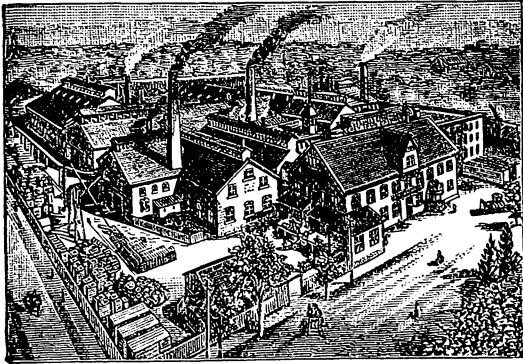
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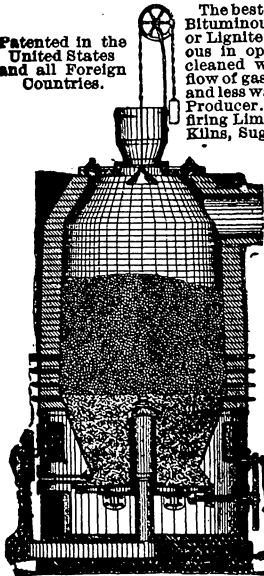
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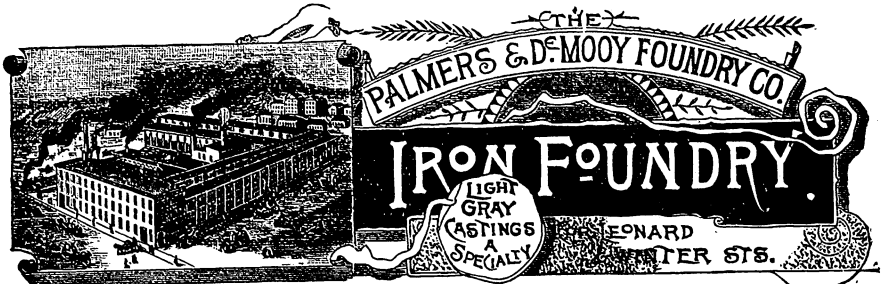
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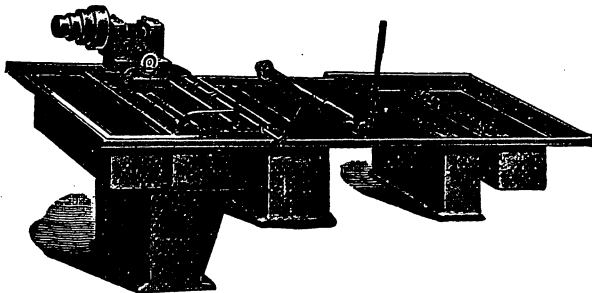
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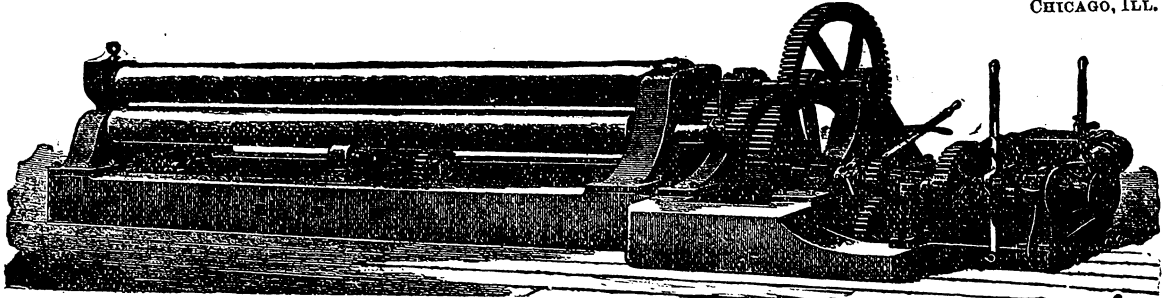
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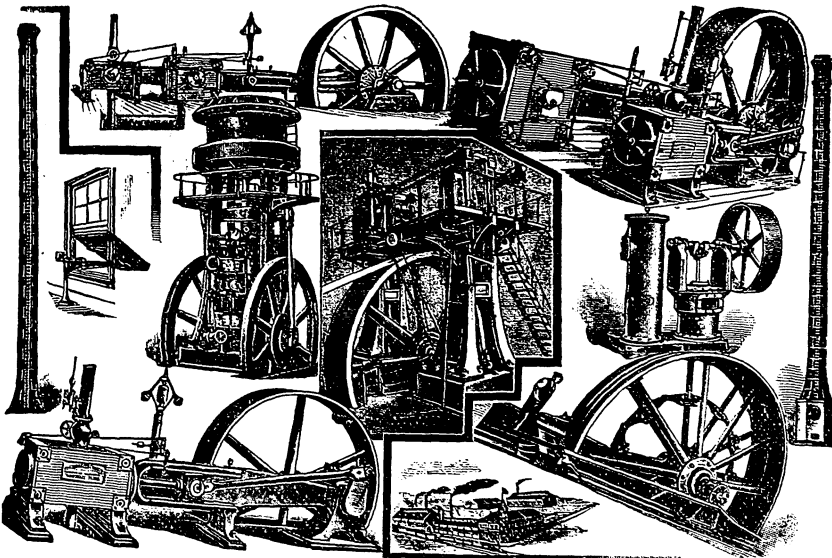
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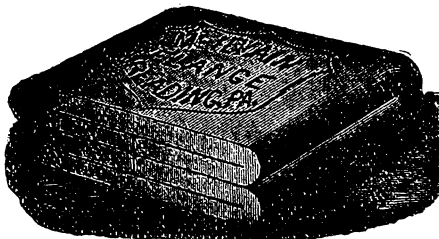
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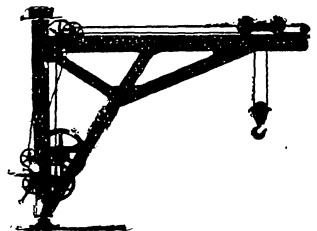
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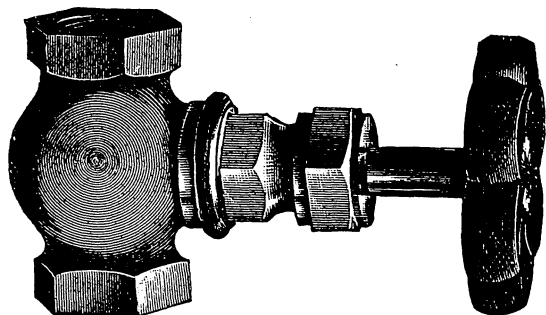
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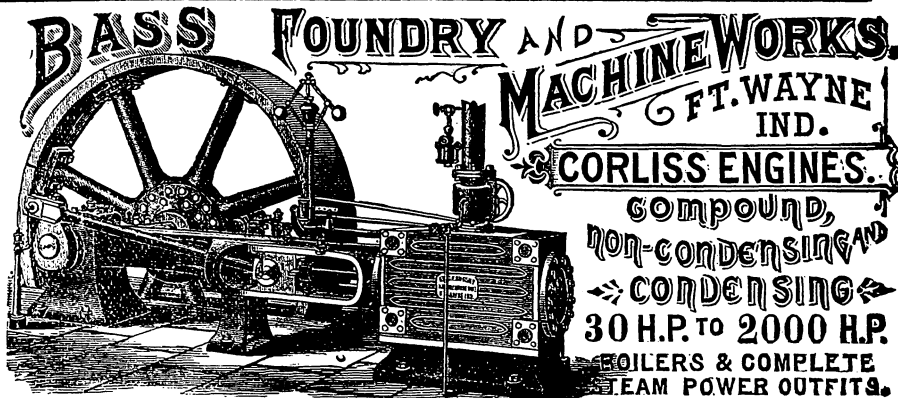
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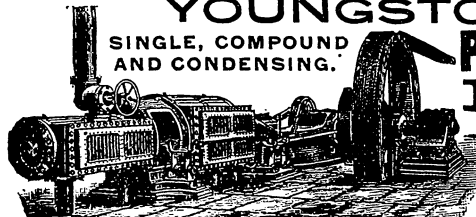
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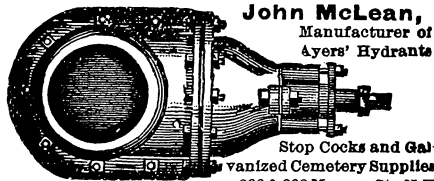
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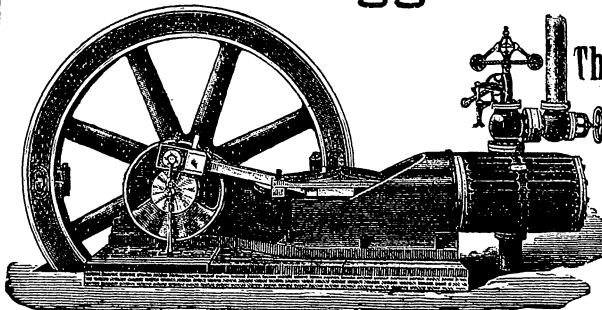
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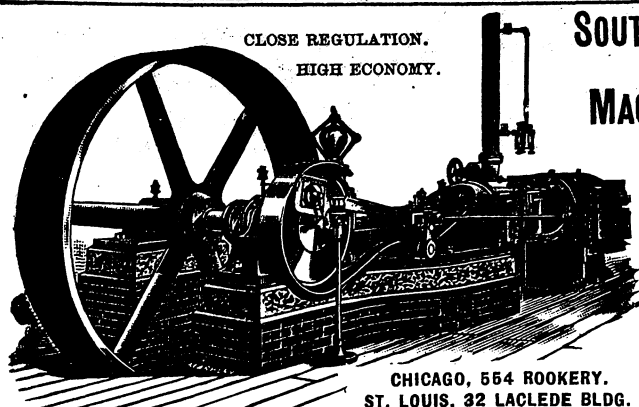
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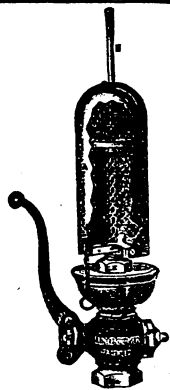
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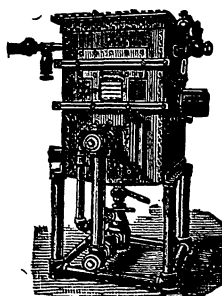
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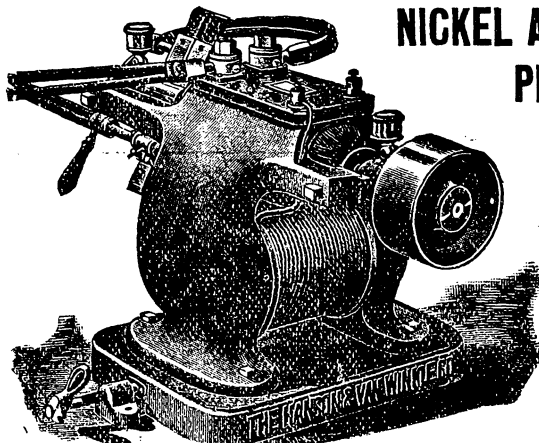
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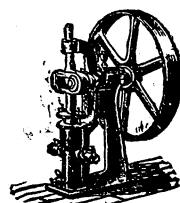
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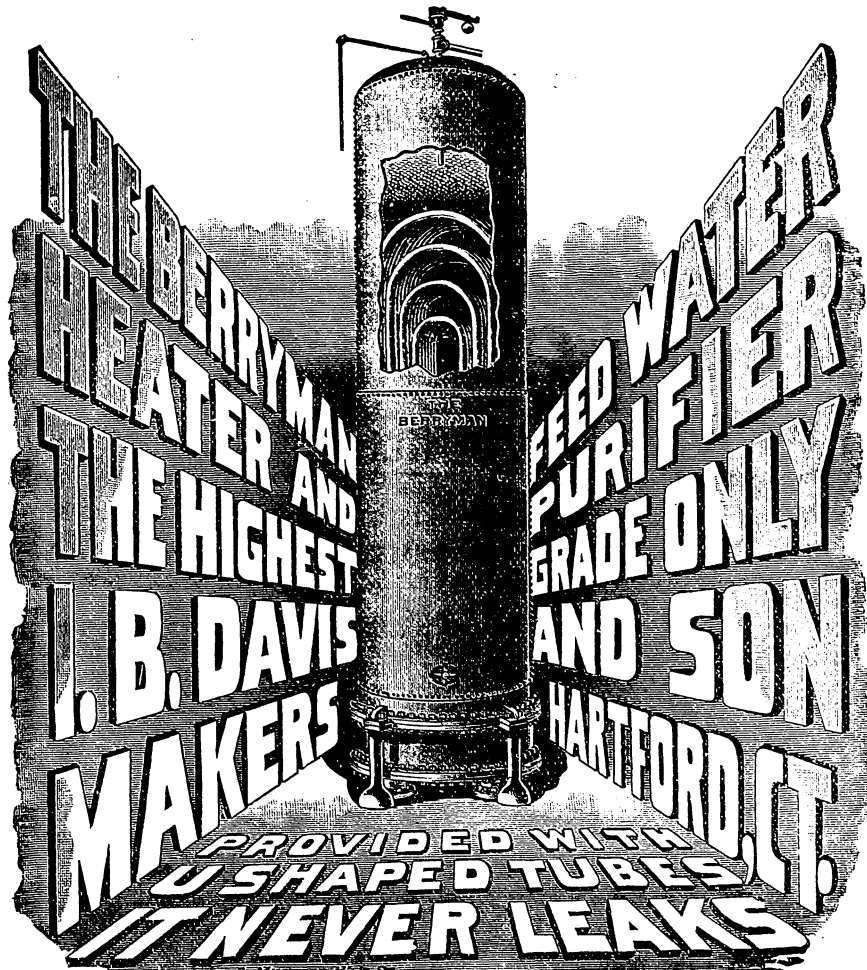
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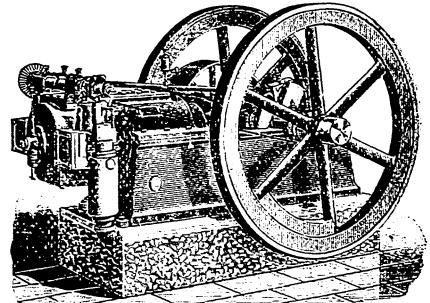
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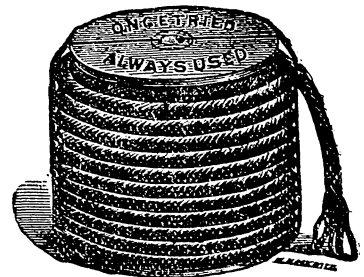
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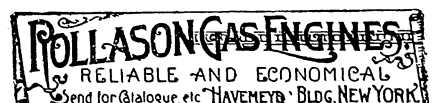
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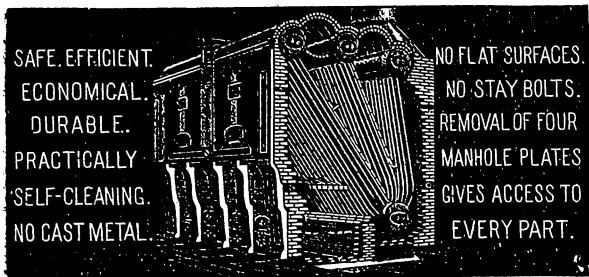


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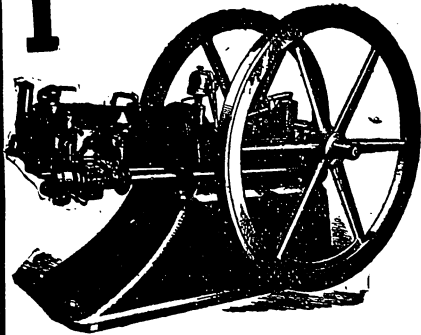


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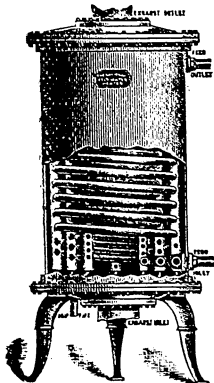
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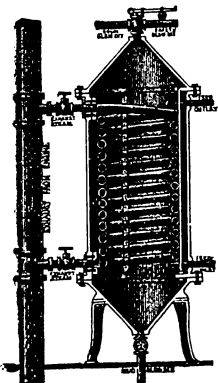
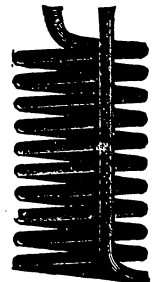


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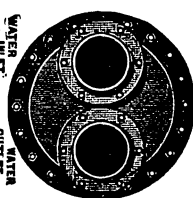
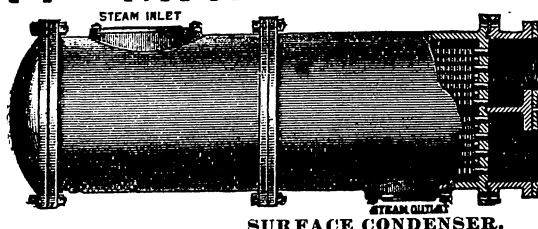
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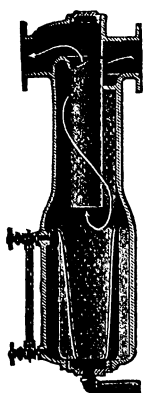
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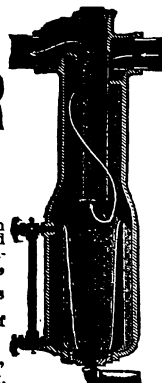


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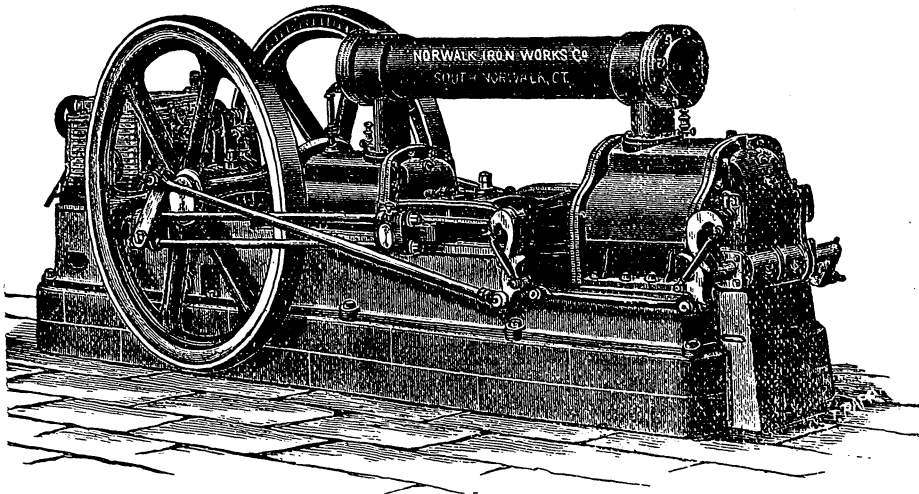
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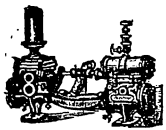
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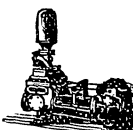
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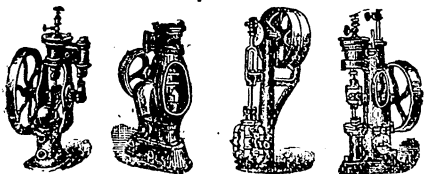
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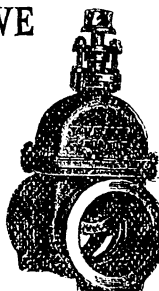
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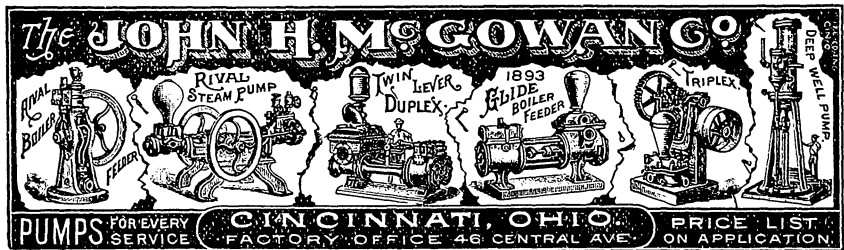
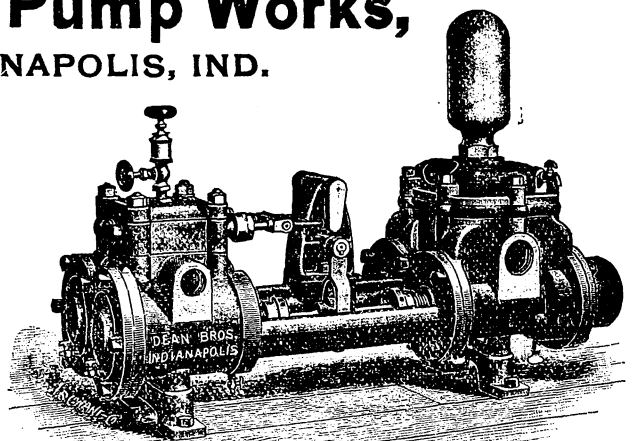
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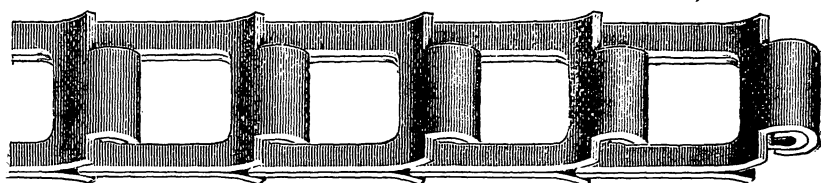
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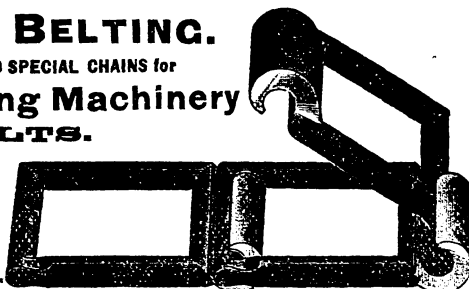
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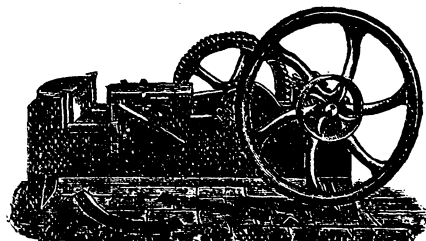
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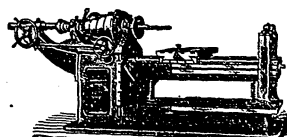
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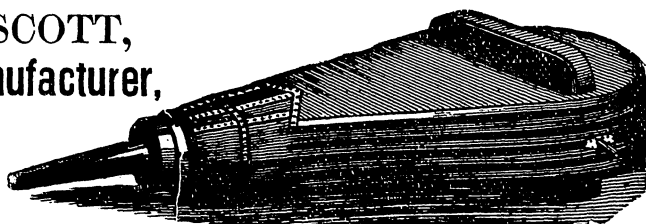
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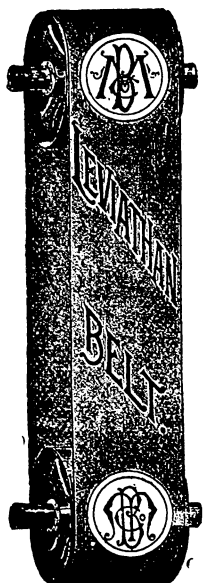
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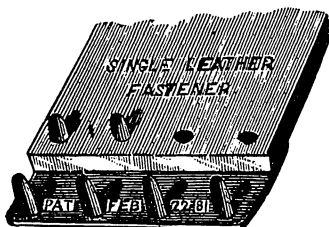
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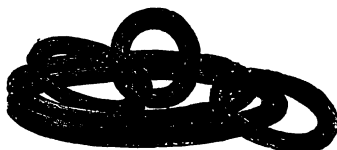
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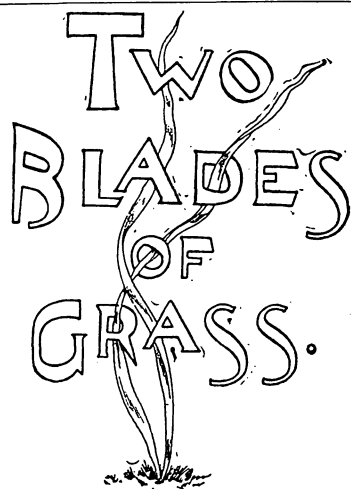
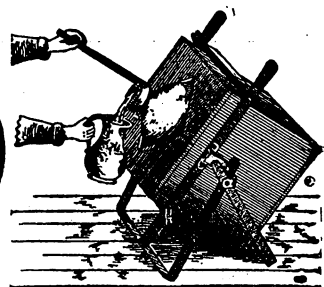
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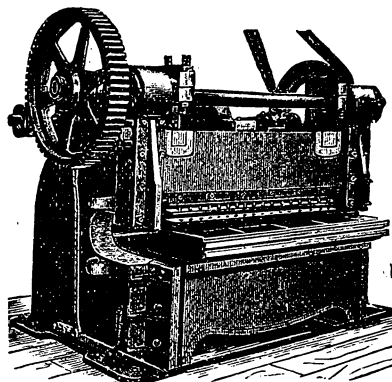
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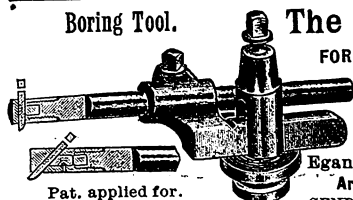
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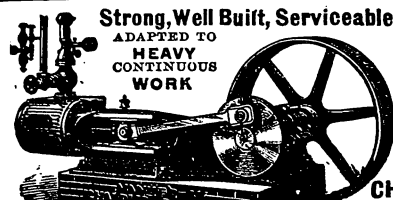
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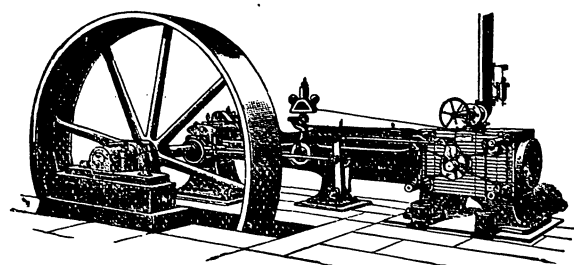


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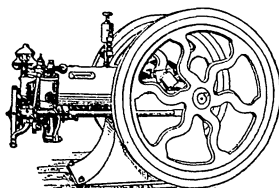
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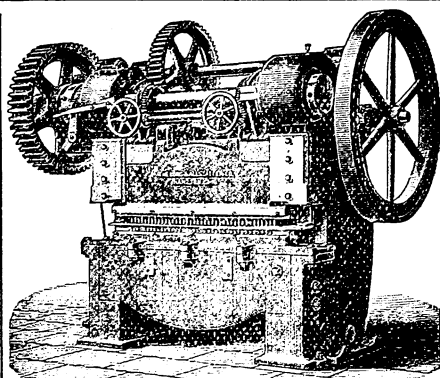
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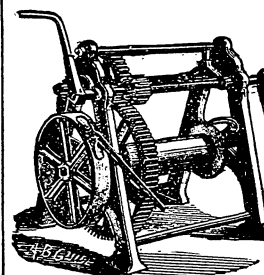
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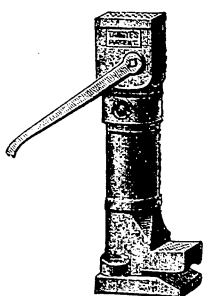
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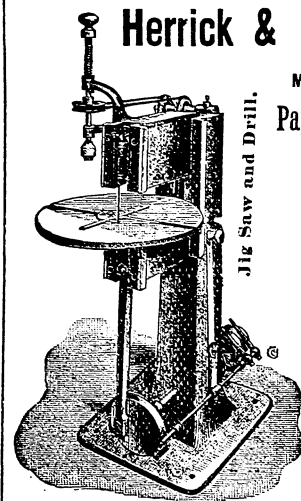
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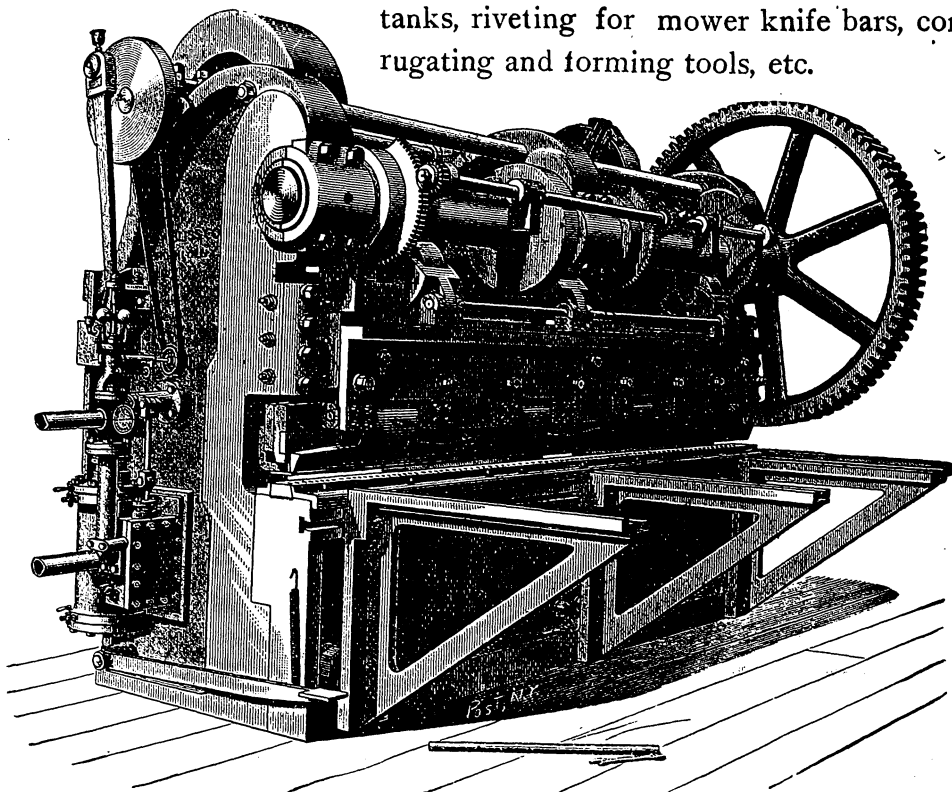
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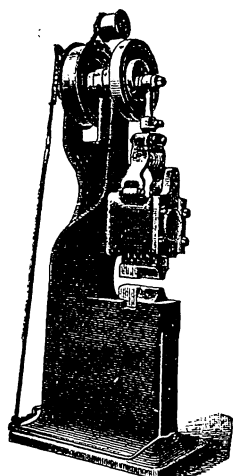
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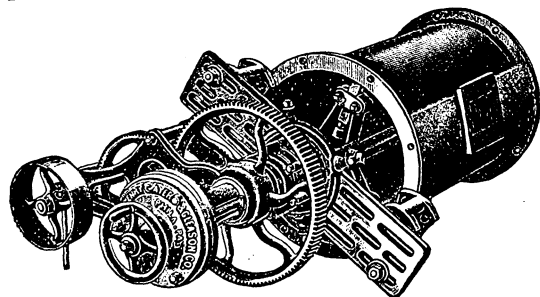
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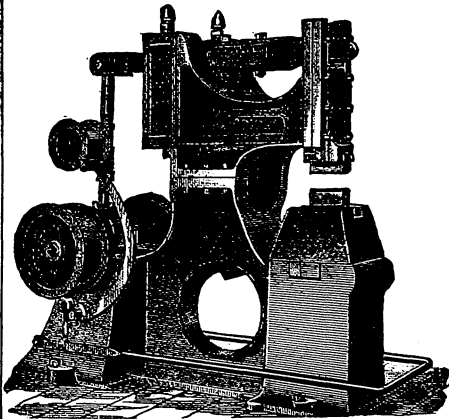
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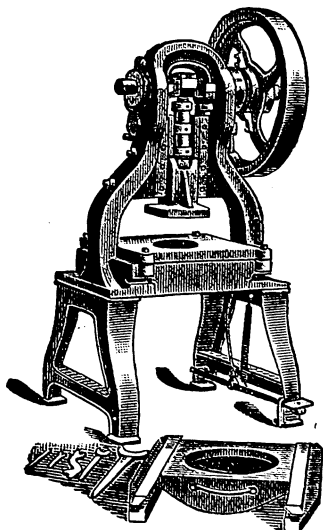
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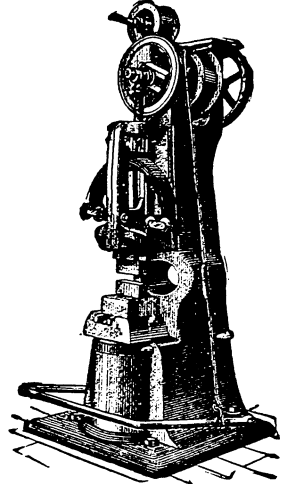
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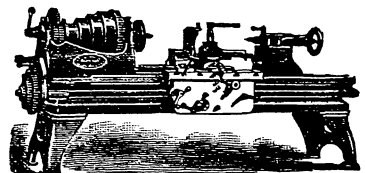
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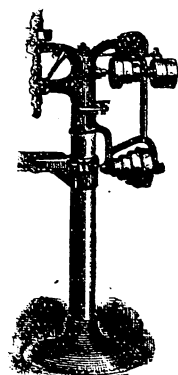
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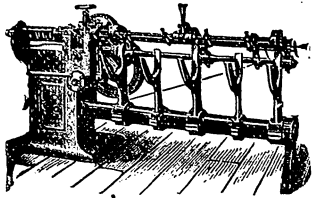
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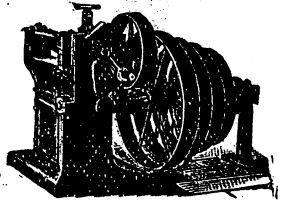
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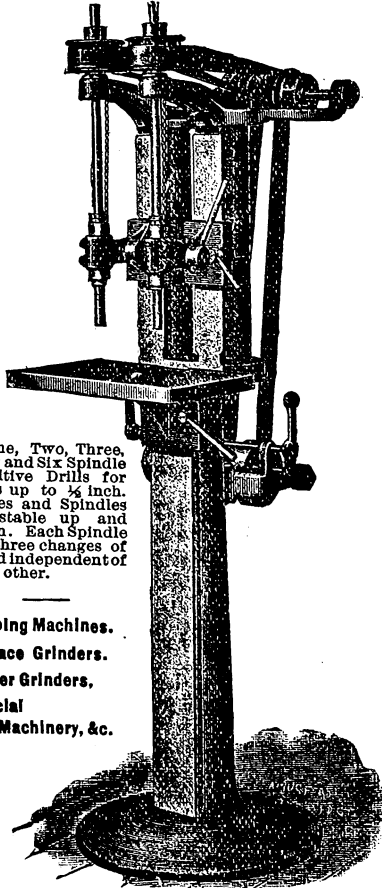
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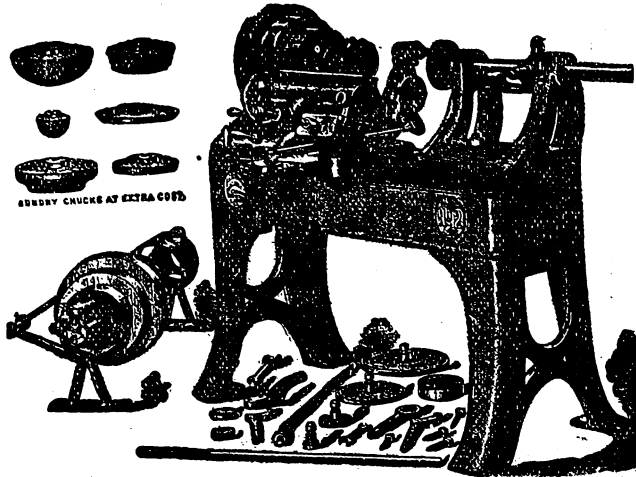
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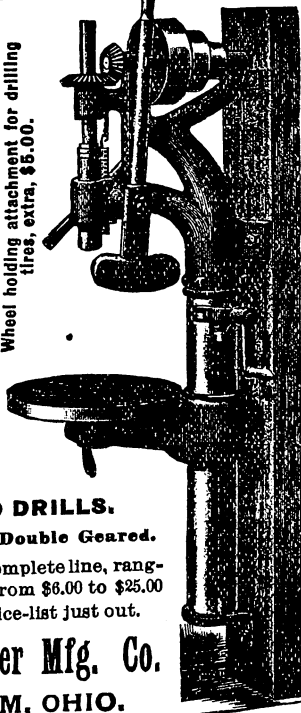
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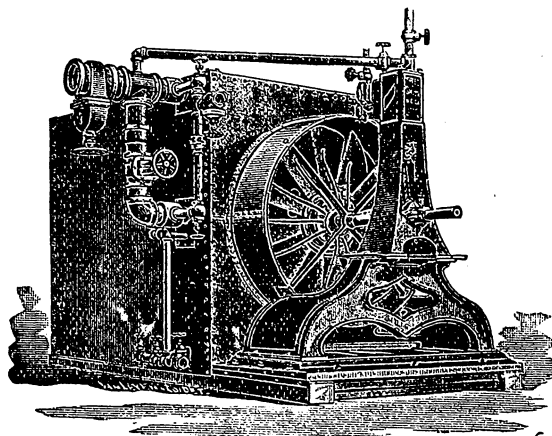
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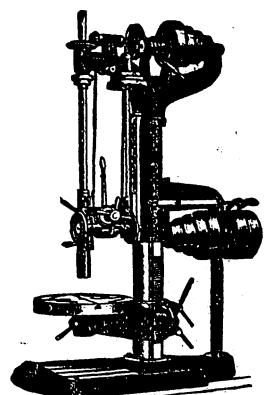
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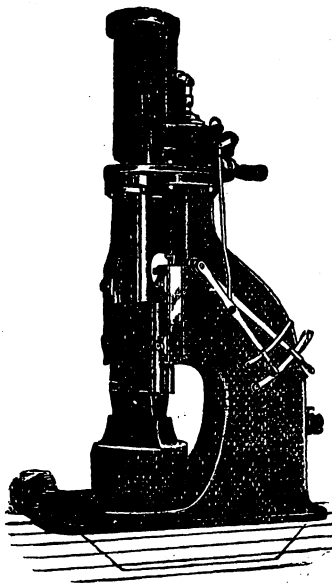
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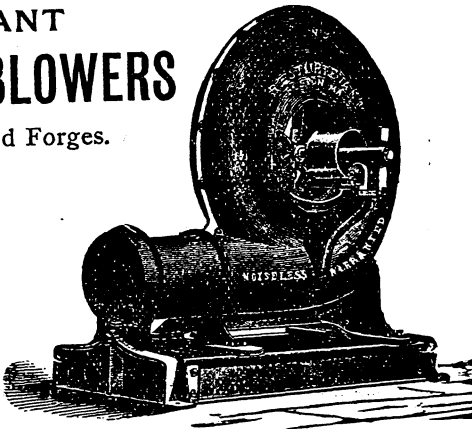
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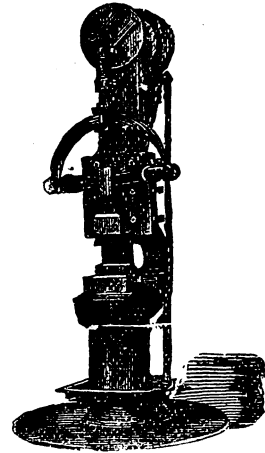
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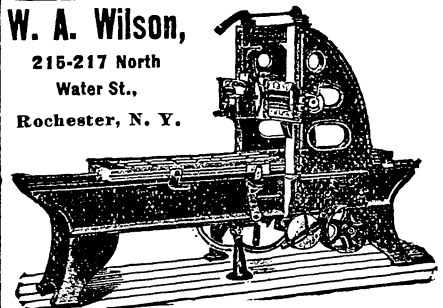
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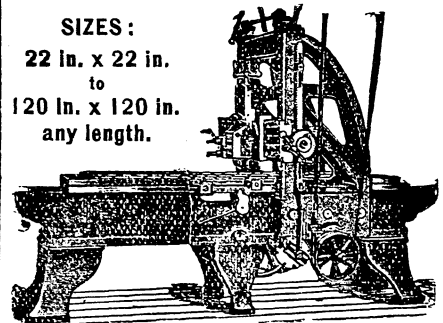


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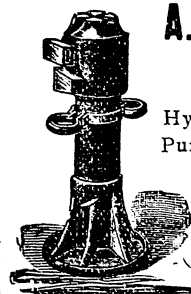
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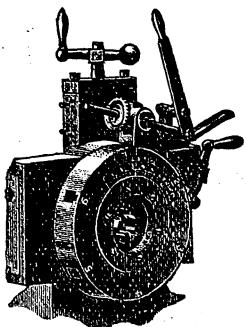
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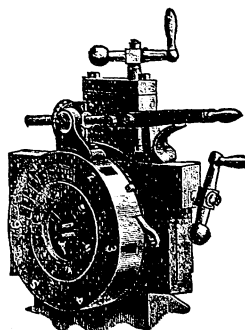
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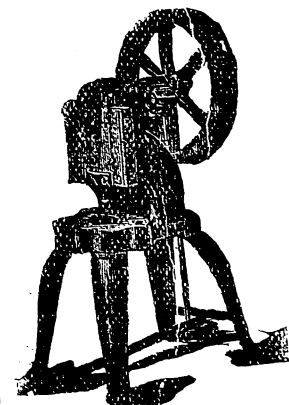
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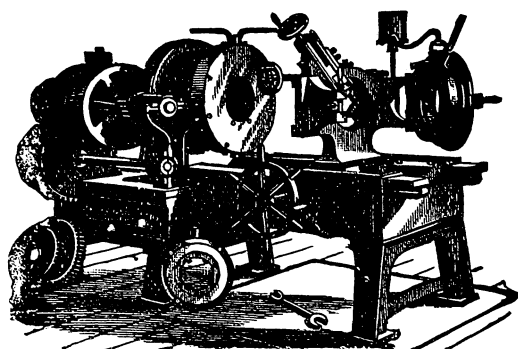
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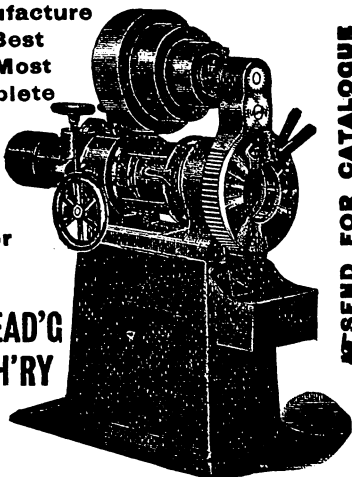
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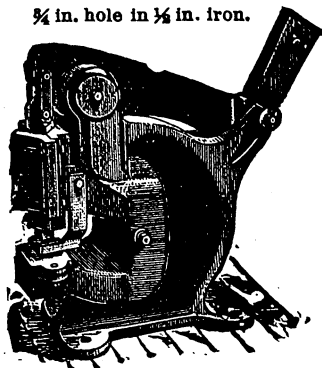
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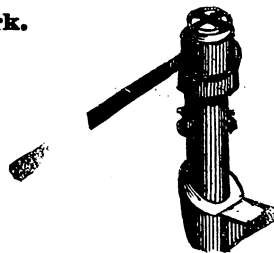
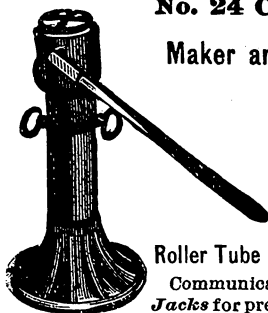


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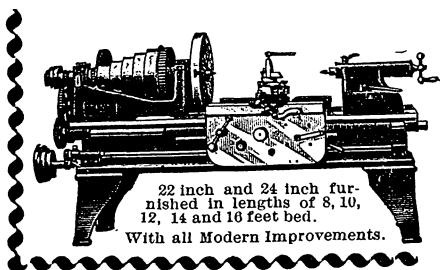


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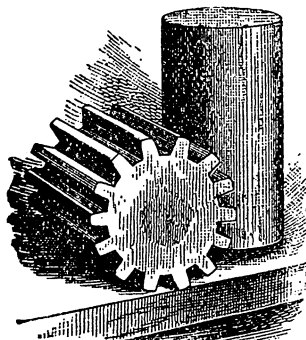
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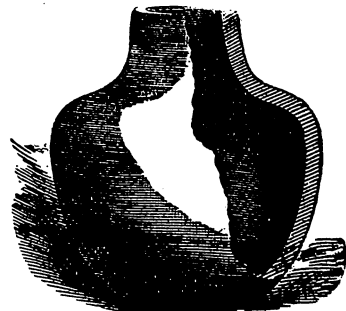
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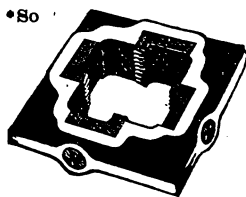
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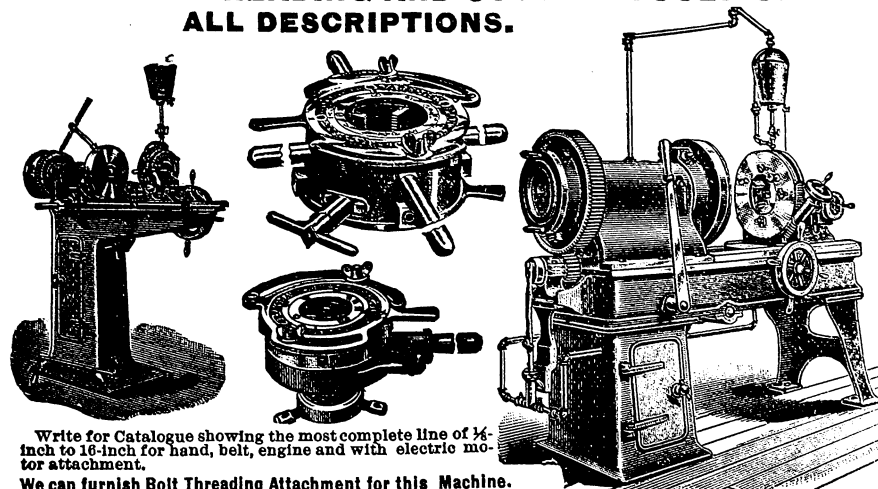
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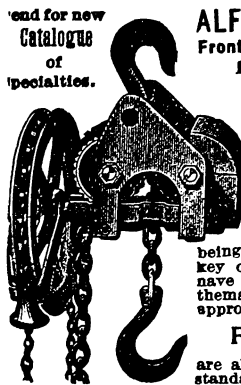
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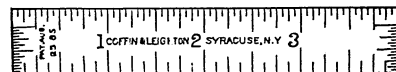
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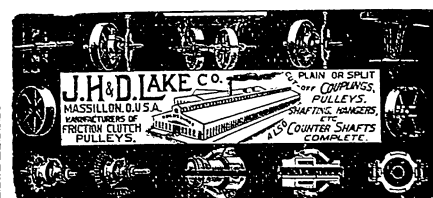


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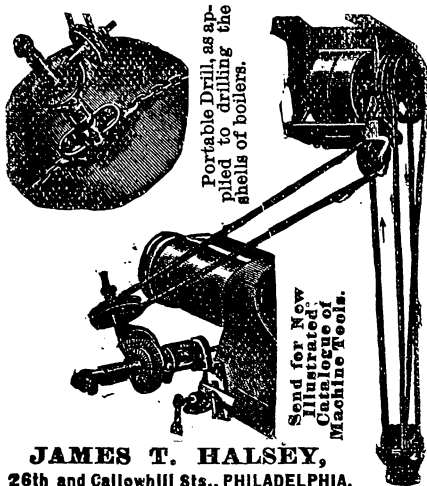
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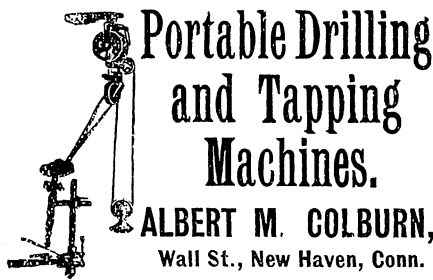
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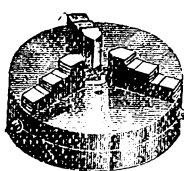
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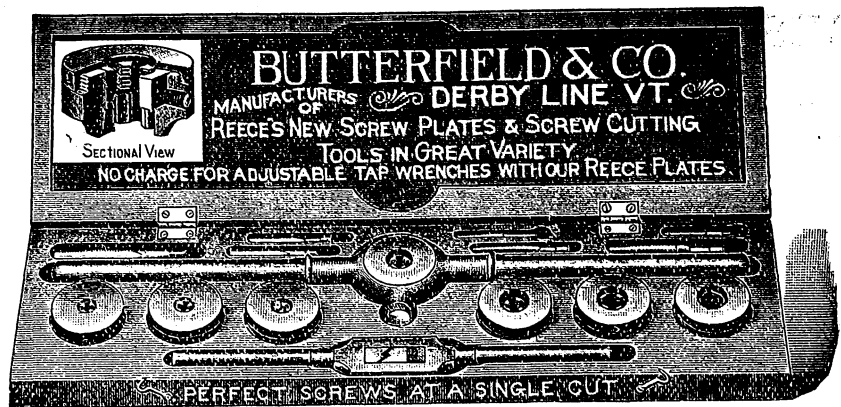


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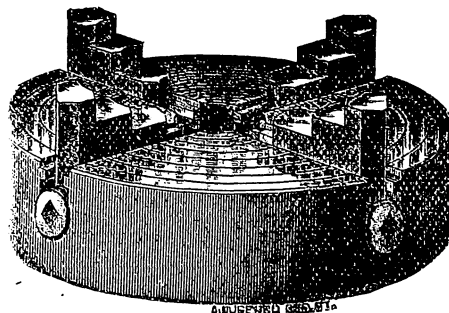
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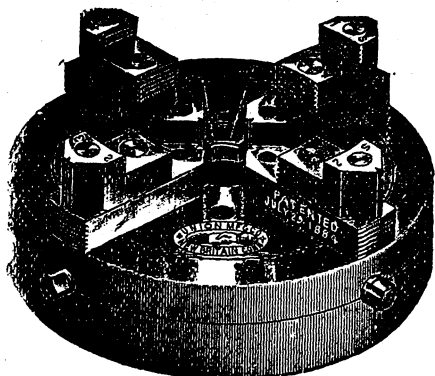


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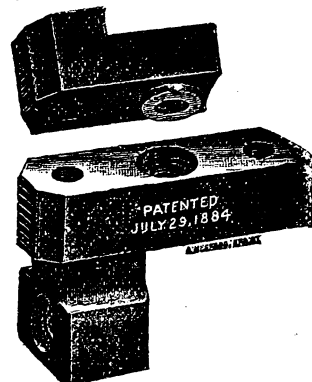
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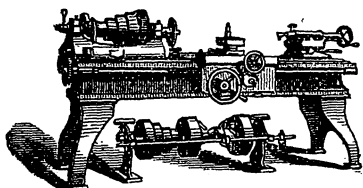
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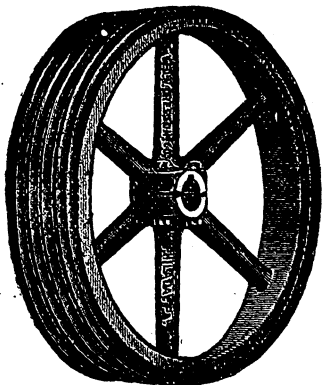
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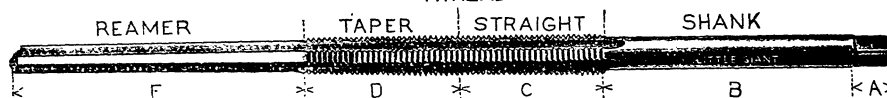
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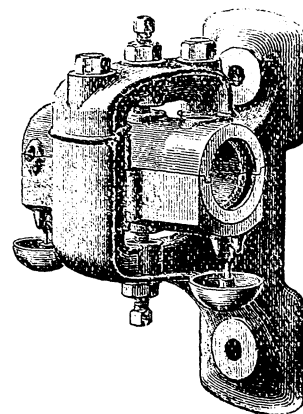
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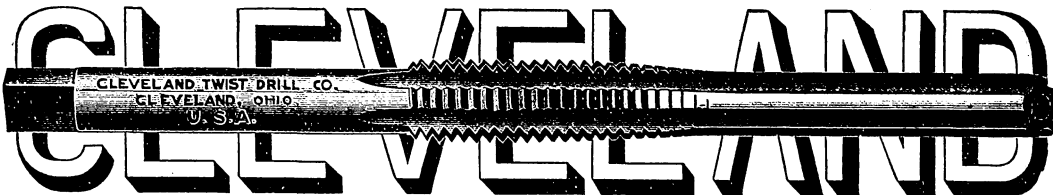
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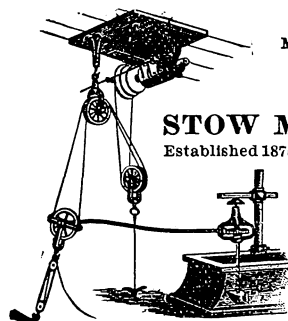
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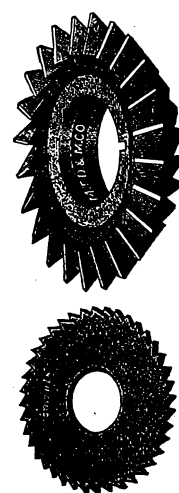
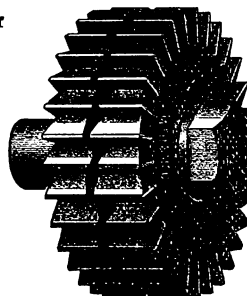
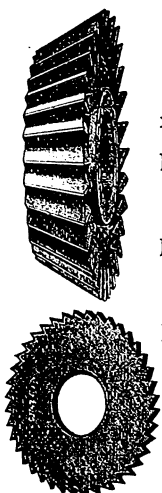
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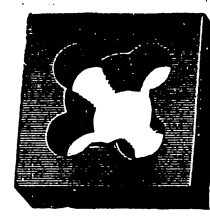


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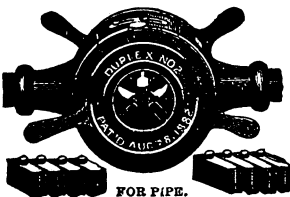


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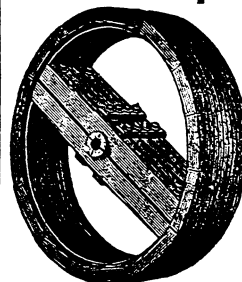
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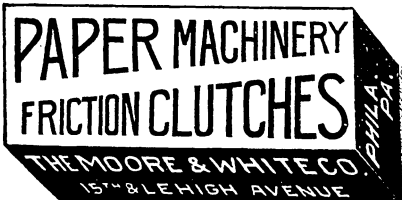
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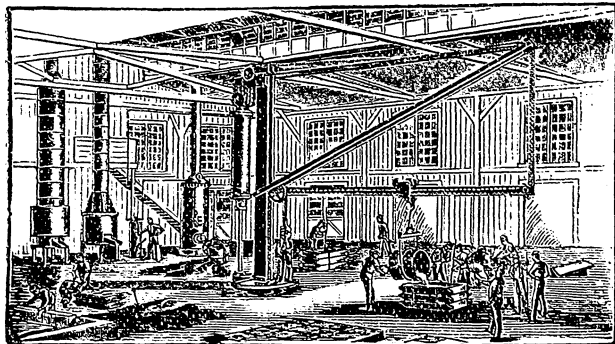
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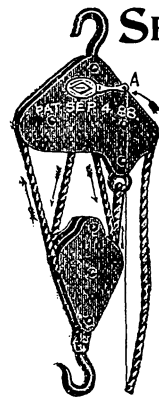
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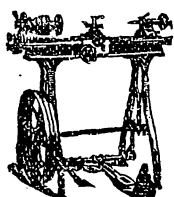
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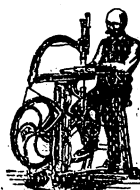
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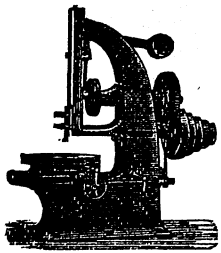
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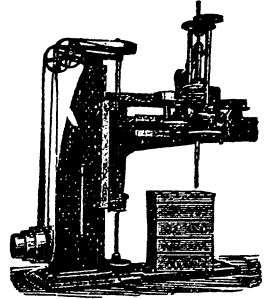


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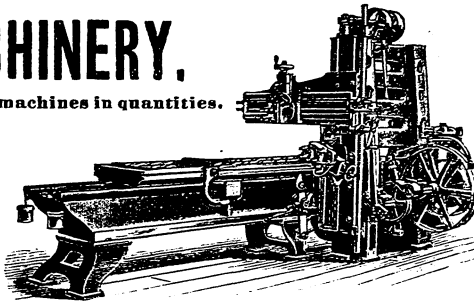
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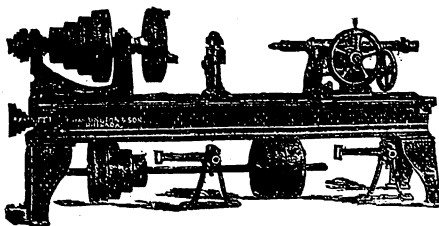
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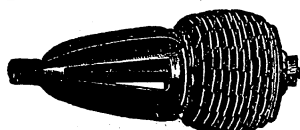


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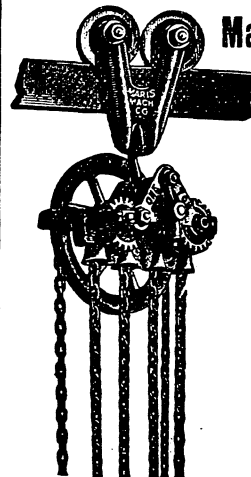
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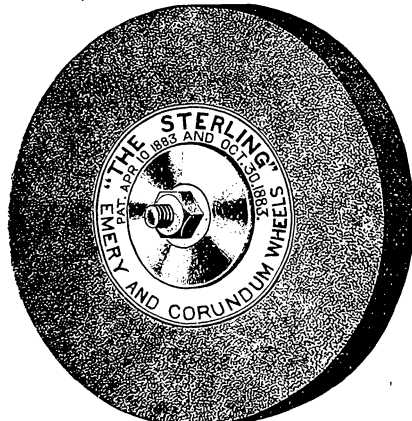
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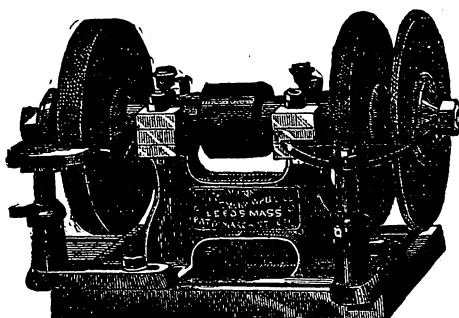
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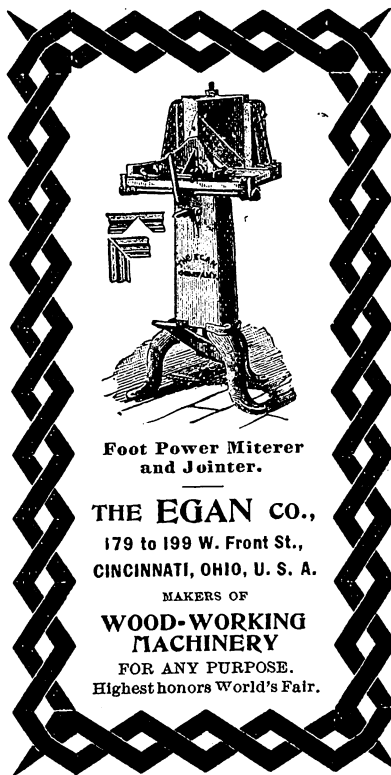
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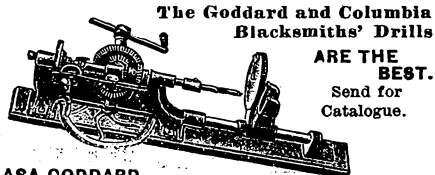
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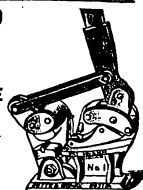
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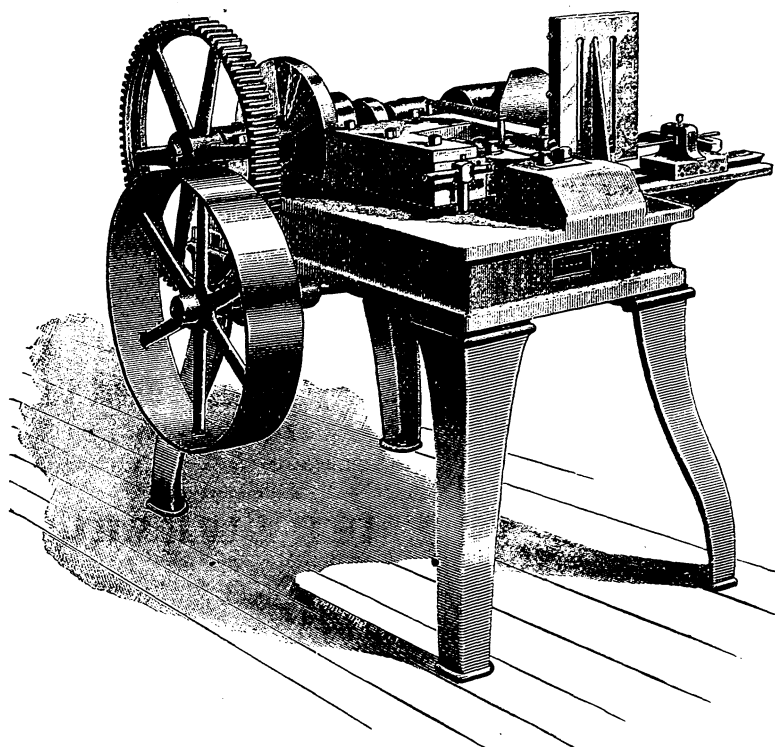
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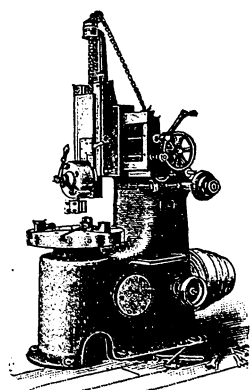
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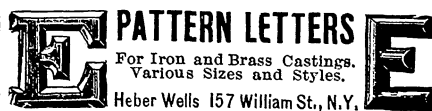
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1 8 H.-P. Engine. Second-hand.
1 50 H.-P. Woodbury & Booth Engine. Second-
hand.
1 10 H.-P. Woodbury & Booth Engine. Second-
hand.
1 6 H.-P. Vertical Engine. Second-hand.
1 25 H.-P. Otto Gas Engine.
1 2 H.-P. Baxter Engine and Boiler. Second-
hand.
1 3 H.-P. Baxter Engine and Boiler. Second
hand.
1 35 H.-P. Payne Engine. Second-hand.
This list will be changed each week.

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Rochester, N. Y.

SEE HERE!

- 3 each 12 in. and 15 in. Brass Finishing Turret Lathes
1 each Garvin No. 2 & No. 4 milling machines, 2d hand
1 Pratt & Whitney Lincoln Miller No. 3, 2d hand.
30 in. Hendey Pulley Lathe, 2nd hand.
1 Lodge & Davis 17 x 6 Engine Lathe, 2d hand.
1 Pratt & Whitney 19 x 6 Engine Lathe, 2d hand.
1 Lodge & Davis, 21 x 8 Engine Lathe, 2d hand.
1 Dietz Gang 22 x 8 Engine Lathe, 2d hand.
1 New Haven 28 x 8
1 22 in. x 10 in. Engine Lathe, new.
1 22 in. x 10 in. Engine Lathe, with turret on shears,
new.
1 Dietz Gang 80 in. Radial Drill, 2d hand.
1 20 in. Lever Drill, new.
1 15 in. Crank Shaper, 2d hand.
1 Gear Cutter, will cut up to 40 in., 2d hand.
1 Baker Bros. Universal Saw Bench, new.
A full line of the most improved Turret Lathes, and
Pulley Machinery, also Motor Gear Cylinder Boring
and Triple Facing Machines.

THE LODGE & SHIPLEY MACHINE TOOL CO.,
107-113 Culvert St., Cincinnati, Ohio.

FOR SALE.

Good Second-hand Improved Ma-
chine Tools.

One large Engine Lathe, 60 in. x 20 ft.
One large Planer, 78 in. x 78 in. x 12 1/2 ft. Double
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One large 10 ft Boring Mill. Double Head.
One large Engine Lathe, 40 in. x 16 ft.
One large Engine Lathe, 36 in. x 17 1/2 ft.
One large Engine Lathe, 30 in. x 19 1/2 ft.
One large 6 ft. Boring Mill.
Two large 60 in. Radial Drill Presses.
One Planer, 36 in. x 42 in. x 7 ft. Double Head.
One 36 in. Horizontal Boring Machine. 24 in. Cross
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One 8 in. Slotting Machine.
These tools are of the most reputable build and
most of them are practically new. Will sell at low
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SECOND-HAND MACHINERY.

14 in. x 6 ft. Fitchburg Engine Lathe.
14 in. x 8 ft. " " "
21 in. x 14 ft. " " "
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9 in. New York Steam Engine Co. Shaper.
8 in. Niles Semi-Universal Radial Drill.
9 in. Niles Slotting Machine.
60 in. Niles Pulley Borer.
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8 ft. 3 in. " " Power " "
8 ft. Morgan, Williams and Co. Power Boiler
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Punch and Shear.
25 in. x 25 in. x 5 1/2 ft. Hubener Screw Planer.
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All in good order.

Also 600 new and second-hand tools in
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Engines with Cylinders 28 in. x 48 in. and
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PLANER, 24 in. x 24 in. x 8 ft., table. Good order \$185.00
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2 Double Deck Boilers about 40 H.-P. each,
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Stacks, 30, 36 and 42 in. diameter. Round and
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Wrought and Steel Scrap, Boiler Plate, Cast
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On account of the

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of a prominent manufacturer, we are
enabled to sell at private sale, piece-
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from 48-inch swing to 12-inch swing,
Planers, Shapers, Milling Machines,
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TWO OF THEM; SECOND HAND.

Makers' Name, KERKHOFF & CO.
Height, 8 ft. 2 in.
Greatest Distance Spindle
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Weight complete, 2600 lbs.
Back Geared and Power Feed, Quick Return,
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500 tons Relaying Steel Street Rails,
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Special lot of
NEW ENGINE LATHES,

13 in. x 5 ft. 17 in. x any length bed.
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27 in. x 12 ft. 30 in. x any length bed.
32 in. x 12 ft. 32 in. x any length bed.

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Successors to
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BARGAINS.

24 x 48 Miller & Allen Corliss Engine.
16 x 36 Slide Valve Engine.
16 x 24 " " " New.
15 x 30 " " " " "
15 x 18 " " " " "
14 x 30 " " " " "
12 x 20 " " " " "
14 x 20 Vertical " " New.

A large number of new and second-hand Boilers, Engines, Lathes, Planers, Shapers, Millers, &c., in stock.

Write us for what you want and we will give you prices and full information.

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We have just published a list
of over

100 pieces of Machinery

OF DIFFERENT KINDS,

consisting of Lathes, Planers, etc. If you are in the market for any tools of this nature write us for circular.

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SECOND-HAND MACHINERY.

1 Iron Planer 60 in. x 60 in. x 20 ft., 2 heads on Cross Rail.
1 Iron Planer 34 in. x 26 in. x 7 ft. 1 30 in. x 30 in. x 8 ft.
1 Iron Planer 24 in. x 24 in. x 4 ft. 1 32 in. x 25 in. x 6 ft. 6 in.
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1 Engine Lathe 48 in. x 16 ft., raised to 60 in., Putnam make.
1 Engine Lathe 36 in. x 14 ft., Putnam make.
1 " " 37 in. x 17 ft., D. W. Pond make.
1 " " 26 in. x 10 ft., " "
1 " " 24 in. x 25 ft. 9 in., A1. 1 24 in. x 14 in., New Haven.
1 Engine Lathe 20 in. x 12 ft., New Haven. 1 18 in. x 3 ft., New Haven.
1 Drilling Machine 40 in., B. G. S. F. 1 36 in., B. G. S. F., both New Haven.
1 Drilling Machine 30 in., R. G. Gould.
1 19 in. Shaping Machine, Gould.
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All kinds of Iron and Wood Working Machinery.
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Lathe 52 in. swing, raised to 84 in., bed 40 ft. long. Cranes, 15 ton gib, 30 ft. high, and 12 ton, 18 ft. high. Engines 16 x 24 in., 14 x 24 in., 12 x 24 in., 12 x 20 in., all new. Engines 14 x 30 in., 14 x 24 in., 12 x 20 in., 4 x 8 in., refitted. Hundreds of Iron Pulleys and Flywheels. Four steel rim Cuyahoga Friction Pulleys 60 in. diameter, 15 in. face, with clutches. One ditto 72 in. diameter, 20 in. face.

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Patent just issued and for sale. Cuts the Paper both ways. Adjustable to any width Paper. Requires no rod to hang roll in cutter. Made partly of wood and iron or all iron. Copy of Patent sent on application. Address

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Wright Automatic Engine, 16 in. x 32 in.
Ball Electric Light Engine, 13 in. x 14 in., 100 H.-P.
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1 Self contained Alligator Shear, 12 1/2 in. Knives.
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1 12 in. x 7 in. x 14 in. Epping & Carpenter Pump.
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Upright Fitchburg Engine, 16 x 20 in.
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Gould & Garrison Pump, 24 x 24 x 24 in.
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Also a large stock of smaller sized Pumps of all makers.
Engines, Boilers, Heaters, Pulleys and Shafting.
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Two 125 H.-P. Phoenix Automatic Compound Engines.
One 80 H.-P. Beck Automatic Engine.
One 60 and one 10 H. P. Westinghouse Automatic Engine.
10, 20, 30, 40 and 50 H.-P. Automatic Engines.
100, 200, 300 and 500 H.-P. Berryman Feed Water Heaters.
All the above in first-class condition and cheap.

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Second-hand T Rails — FOR — BUILDERS' USE AND RELAYING FOR SALE.

Second-hand Steel and Iron T Rails of all sizes. Sound and selected and cut to specified lengths promptly for builders' use, vaults, kilns, foundations &c. at low prices and quick delivery. All sizes of selected relaying T and Girder rails ready for shipment at bottom figures. Apply
JOSEPH JEWKES, Steel Rails,
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AT ALL TIMES

we have on hand Steam Pumps, Second-hand and New. Every Second-hand pump is tested and guaranteed before leaving shop. Write us for information, also for catalogue, circulars, prices, etc., of the celebrated "Hooker Patent Steam Pump," which we manufacture.

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SOME BARGAINS HERE.
1 Hender Shaper, 15 in. stroke, imp. vise.
1 14 x 6 Screw Cutting Engine Lathe. New.
1 5 in. hole in Turret Screw Machine and Counter, \$25
2 1/2 Hender Cutting-off Machine. New.
1 3 Spindle Garvin Drill Press, used 1 month.
Radial Drill, 5 1/2 ft. arm.
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Quantity 2nd hand Dodge Pulleys. Cheap.
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Corliss.	High Speed	Horizontal	Vertical
10 x 20	11 x 20	Slide Valve.	Slide Valve.
10 x 24	11 x 24	9 x 12	20 x 24
16 x 32	13 x 12	10 x 12	13 x 16
23 x 36	13 x 12	10 x 24	10 x 12
26 x 48	23 x 36	11 x 20	9 x 10
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30 x 72	15 x 24	12 x 24	7 x 7
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HORIZONTAL BOILERS, 3, 6 x 18; 8, 5 1/2 x 16; 5, 5 x 16; 3, 5 x 18; 1, 4 1/2 x 12, and several others.
LOCOMOTIVE BOILERS, 30, 45, 60, 100 and 150 H. P.
One 1000 gal. Duplex Fire Pump, Brennan Crusher, Bogardus Mill, Burr Mill, Fan Blower, Platform Scales etc., etc. Send for catalogue.

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Buffalo Blowers and Heating Apparatus.
1 Corliss Band Wheel, 12 ft. x 24 in. in halves
1 No. 9 CLAYTON DUPLEX AIR COMPRESSOR, 22 in. Steam x 24 in. Air x 30 in. Stroke. Bargain.

A Variety of Machinery, very cheap.
Do you want to buy or sell Machinery? If so, write

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ENGINES, Horizontal and Vertical. All types and sizes up to 2000 H.-P.
BOILERS, Vertical and Horizontal and 3 Batteries of "Heine" water tube.
MILLS, 3 high, 12 in., 20 in., 22 in., 30 in. and 36 in. 1 Reversing 32 in. Blooming Mill complete.
STEAM HAMMERS. Various sizes up to 10 ton.
SHEARS. Cut from Bands to Blooms and one to cut Plates 1 1/4 in. thick, 90 in. long.
SQUEEZERS, ROLL LATHES, CRANES, GRINDING PANS, MACHINE SHOP TOOLS, &c.
LOCOMOTIVES. Fine condition, various sizes and gauges.

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DON'T INVEST in expensive tools or machinery or let a contract before getting our estimate for making novelties or parts. Fine, difficult and accurate parts a specialty. White metal work at prices that cannot be duplicated. Inventions perfected. Models made. Secrecy and satisfaction guaranteed, and no extra charge for new ideas or improvements. To insure reply to letters of inquiry only, enclose stamp. **THE H. H. FRANKLIN MFG. CO.,**
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Responsible parties to manufacture and sell on royalty, a cheap portable steel or iron **CULVERT BRIDGE**; it is adapted to all small streams, runs, etc., in roads, streets, **RAILROADS**, etc.; improved roads is the order of the day; use this bridge, put it below the level of the road, cover it over and thus prevent larring and wear and tear of vehicles, etc. Apply to
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I have just invented a pressure governor for fluids that is a great improvement on all its predecessors. It will be used principally to control the pressure of city water and for steam. It serves equally well for all kindred purposes. The simplest thing in the world and the surest. Patents secured in the United States and applied for in England, Germany, France, Spain-Cuba, Belgium and Canada. I would like to correspond with reliable brass founders, in any country, who care for such business and who might want to manufacture these governors on royalty, controlling specified territory. **CAPT. W. HOFFMAN,**
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Machines and Pattern from 8 in. to 36 in. diameter inclusive, and all widths of faces.
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SECOND-HAND MACHINERY.**ENGINE LATHES.**

2 11 in. x 5 ft. Raise and Fall Rest, Reed & Prentice. A1 order.
 1 15 in. x 6 ft. Plain Gib. Reed. A1 order.
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1000 feet of Iron Railing or Fence suitable for bridge, lawn or cemetery.
 50 large cast Iron Lamp Posts. Photograph on application.

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1 Corliss Engine, nearly new; 250 H.-P.
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Front and Dover Streets, New York City.

FOR SALE.

One 28 in. x 60 in. poppet valve lever Engine with one 24 ft. fly wheel weighing 27 tons and one cast steel shaft 20 in. diameter at centre.
 One large Totten Rotary Squeezer complete.
 One double set, 3 high, 20 in. muck train with spare rolls.
 One 20 in., 2 high, muck train with spare rolls.
 All the above machinery is in good condition and will be sold very cheap. Can be seen at, or address

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Second-hand Machinery For Sale.

2 36 in. x 11 ft. Horizontal Stationary Boilers.
 1 12 H.-P. Upright Engine (Greenfield).
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 1 15 H.-P. Horizontal Engine.
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 1 24 in. x 25 ft. Engine Lathe.
 2 No. 2 Roots' Blowers.
 2 No. 6 Roots' Blowers.

Also other machinery at low prices.

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350 boxes of No. 18 Iron Jack Chains, one dozen yards in a box. Apply, stating best price offered for the lot, CLIMAX MANUFACTURING CO., Cleveland, O.

FOR SALE.

1 new 7-in. train complete to roll either iron or steel.
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BARGAINS IN Second-hand Machinery.

We offer at very attractive prices a lot of machinery from

The New Howe Sewing Machine Co.'s Plant,

INCLUDING

Engine Lathes,
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 Hand Lathes,
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ALSO

A large stock of second-hand machine tools of all kinds. Write for detailed description and prices.

GARVIN MACHINE CO.,
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Boiler Rolls and Shears.

Hand Rolls 4 and 6 ft. wide.
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 Power Rolls 8 ft. wide.
 Power Rolls 10 1/2 ft. wide.
 Plate Shears 30 in. Gap, cuts 3/4 in. plate.

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Bradley 50 lb. Upright Helve Hammer.
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FOR SALE.**COMPLETE WIRE NAIL MILL.**

75 Machines, Buildings And
 10 Acres of Ground,
 Including two Gas
 Wells.

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FOR SALE OR LEASE.

New York City Rolling Mill, foot of East 23d street. Modern plant, consisting of three high 18 in. Muck Mill and 10 in. Finishing Mill, with Rolls to make 3/4 in. to 2 in. round or square, 3/4 in. to 3 in. flat, thick or thin sizes; two heating and one busheling or puddling furnace. Excellent location. Large trade in Merchant Bar and H. S. Iron, cheap scrap. Particulars and satisfactory reasons for disposing by personal interview only.

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502-506 East 23d St., New York

FOR SALE.

Entire plant of the Union Saw Co., including all machinery, tempering furnaces, etc., necessary for the manufacture of hand saws, etc., or advertiser will consider proposition of partnership. Address

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Machine Tool Co., Cincinnati, O., U. S. A.,

Have for sale a large line of first-class second hand Engine Lathes, Planers, Shapers, Drill Presses, Milling Machines, &c.

WRITE FOR LIST AND PRICES.

PITTSBURGH SALES AGENCY,

J. H. HILLMAN, Manager,

No. 8 Wood St.,
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Offers for sale at very low prices BESSEMER STEEL WORKS and STRUCTURAL STEEL MILLS, also STEEL MILL for Rolling Bars and cold rolling, two BLAST FURNACES, a RUSTLESS IRON WORKS, interest in TIN MILL in INDIANA, TUBE WORKS and numerous other manufacturing interests and large quantity of very desirable COAL PROPERTIES, improved and unimproved.

Dealers in Coal and Iron Lands.

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A Bargain.

A FINE

Business Opportunity

for a live business man or two partners who have \$25,000 to invest in a first-class, old, well established and well located

JOBGING and RETAIL HARDWARE

business, which did not lose money last year.

STOCK IS WELL ASSORTED.

Good location in large Eastern City. Reasonable lease of premises can be continued. This will bear full investigation. Parties who can command above amount of capital address

"BARGAIN," Box 315,
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WANTED.

600 tons 60-pound Rails, new or equal to new, with bolts and fish plates complete. Also 1500 kegs Spikes for same. Address ROOM 183, 29 Broadway, New York.

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D. A. MOULTON, Executor,
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DON'T LOOK ANY FURTHER FOR BARCAINS.

2 66 x 16 Horizontal Return Tubular Boilers.
 1 32 x 15 " " "
 1 22 H. P. Vertical Boiler, new.
 1 40 H. P. Double Decker, second-hand.
 1 8 H. P. Portable Engine and Boiler, second-hand.
 2 10 H. P. " " "
 1 80 H. P. Ball Automatic Engine, good condition.
 1 No. 1 Exeter Blower, new.
 1 8 H. P. Vertical Boiler on wheels.
 1 4 1/2 x 5 Vertical Engine, new.
 1 6 1/2 x 8 " " "
 1 7 x 10 Link Motion Marine Engine, new.
 1 1 1/2 x 3 Horizontal Engine, new.
 1 9 x 14 " " "
 1 10 x 14 " " "
 1 11 x 18 " " "
 1 16 x 24 " " "

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BRASS WORKING MACHINERY.

SUPREME COURT.—In the matter of the voluntary dissolution of the W. F. Washburn Brass and Iron Works, a corporation. &c.—Notice is hereby given that at the factory formerly occupied by said corporation at corner of Dock and River streets, in the city of Yonkers, Westchester County, N. Y., on WEDNESDAY, THE SIXTY DAY OF JUNE, 1894, at 10 o'clock a.m., I shall sell at public auction all the plant and machinery of said corporation, consisting of machine tools, special tools, nickel-plating outfit, patterns, flasks, furnaces, shafting, pulleys, and the entire mechanical equipment of said corporation for the manufacture of plumbers' fine brass work. Terms made known at sale.

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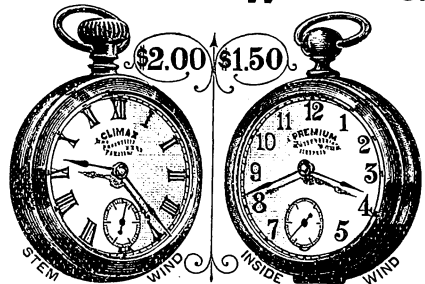
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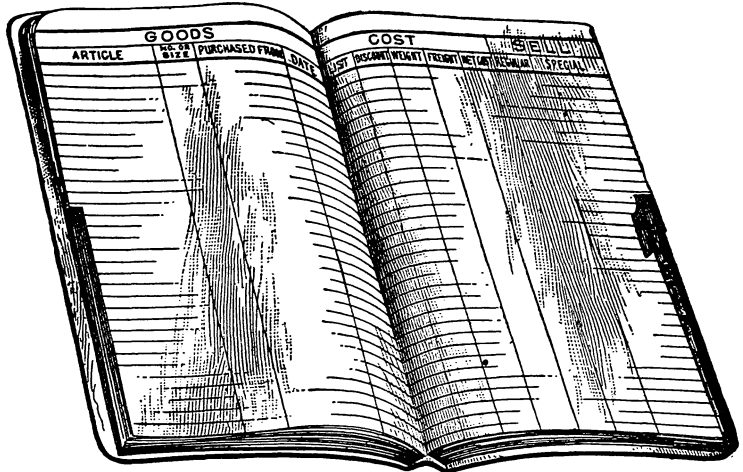
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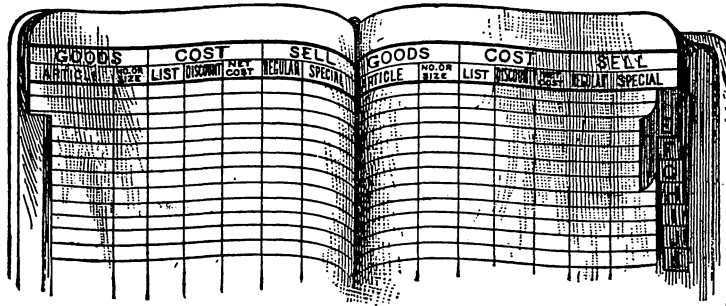
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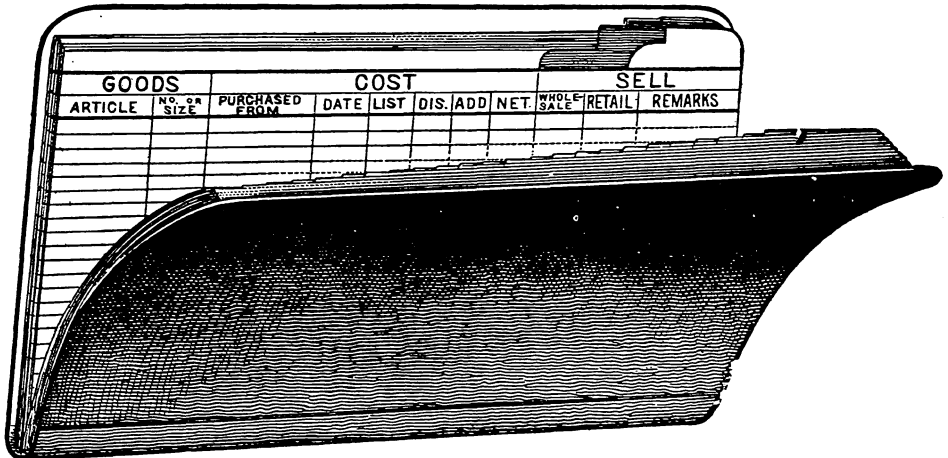
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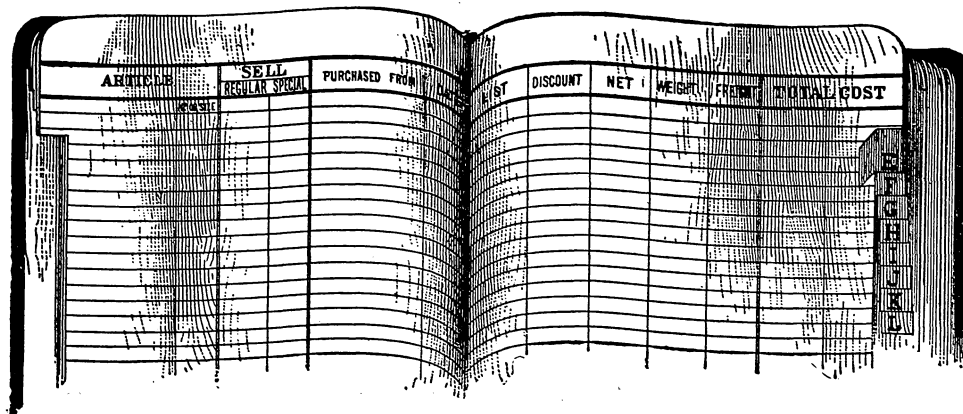
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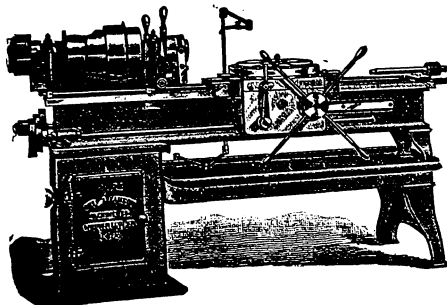
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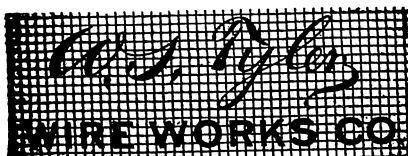
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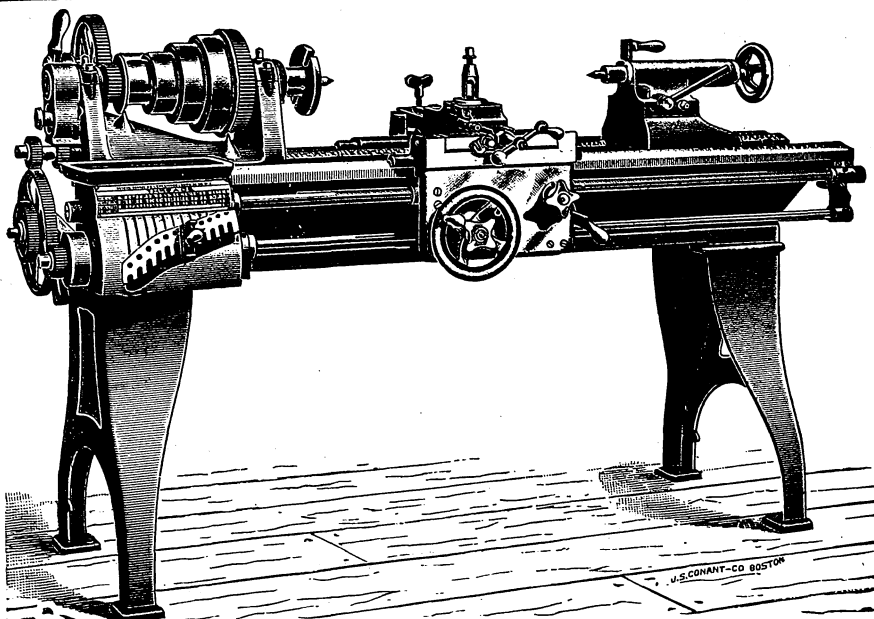
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CHARLESTON, S. C.,
NEW HAVEN, CT.,
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(Linscott Road Race),
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ETC., ETC., ETC.

IN every racing event of the season in which the Stearns Bicycles have been entered they have either won or shared the honors. No exceptions. Other fellows not in it with the Yellow Fellows.

E. C. STEARNS & CO.,
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21 FURMAN STREET (one block south of Fulton Ferry), BROOKLYN, N. Y.

FINE MACHINERY IRON CASTINGS

Tool and Pattern Making, General Machinists, Die, Press and Interchangeable Work, Plain and Ornamental Japanning. Sewing Machine Needles (B N W Brand).

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**THE
BEST
FREEZER.**

Heavy Waterproof Tubs. Cans of Charcoal Tinplate. Malleable Iron Dashers. All inside parts tin-plated. Gearing completely covered.

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BEST
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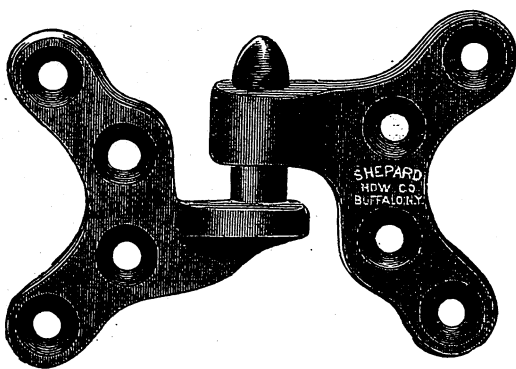


The true test of a Freezer is how well it performs its work; in this respect the unsolicited testimony of thousands pronounce the "Packer Freezers" unexcelled.

GOOD LUCK, STANDARD, AND CONFECTIONERS' MACHINE FREEZERS.

The "Good Luck" is the latest and best low price Freezer on the market. Inside Castings Tinned. Malleable Iron Fittings. Automatic Scraper. White Cedar Pails with Galvanized Steel Hoops. Pine Pails, or Wire Rings with bottom of pail unprotected are not used.

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Gate Hinges and Latches, BLIND AND SHUTTER HINGES

And FRAME PULLEYS

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THE SHEPARD HDW. CO.
Of Buffalo,

whose business in these lines we have
acquired by purchase.

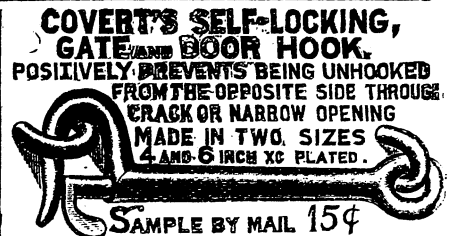
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This snap has many important advantages over other makes of Bolt Snaps, viz.: It is lighter, the spring is entirely covered and protected from foreign substances and freezing, and is lower in price.

Made in all sizes; Round, Loop and Open Eye. We are headquarters and the most extensive manufacturers in Saddlery, Coach and General Hardware Specialties.

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There is a large trade in Bicycles in all parts of the country and much of that trade naturally belongs to dealers in hardware. Good bicycles meet with a ready sale and pay a fair percentage of profit.

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Are the representative high grade machines in America. A Columbia is the easiest machine to sell to the best trade because it is unquestionably the standard wheel of the world.

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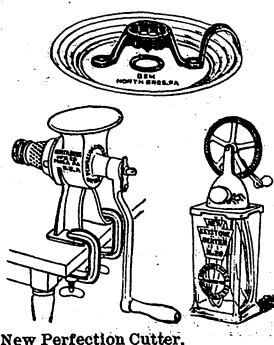
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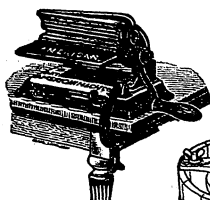
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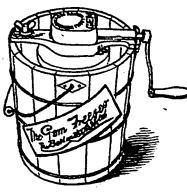


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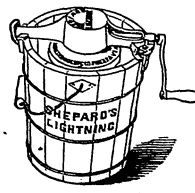


American Fluter.

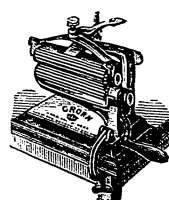
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WORKMANSHIP,
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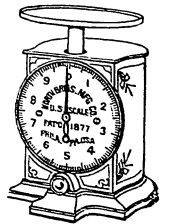


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Guaranteed not to fall off.



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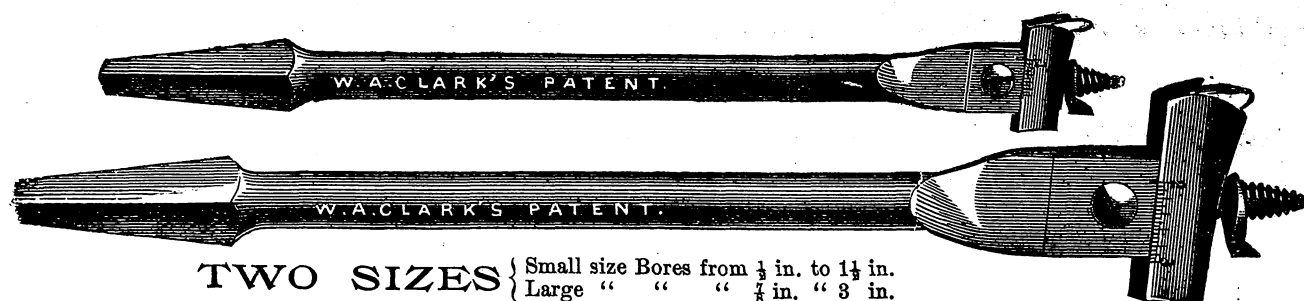


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TWO SIZES { Small size Bores from $\frac{1}{2}$ in. to $1\frac{1}{2}$ in.
Large " " " $\frac{3}{4}$ in. " 3 in.

SPECIAL CUTTERS: No. 5—For Large Bit, Bores from 3 in. to 4 in. No. 6—For Large Bit, Bores from 4 in. to 5 in.

Stock and workmanship superior to all others. Every part interchangeable.

Quality guaranteed. For sale by all Hardware Dealers.

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We make only the best!*



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Palmer's Common Sense Frame Pulley.



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We have experimented much with ball bearing Jacks, and found them very satisfactory when not heavily loaded. Now, instead of balls we put in rollers, as seen in cut. These rollers will stand any load that the Jack will carry, and are not liable to get out of order. We have thoroughly tested these Roller Jacks with a spring balance and find a saving of forty per cent. of power needed to lift a given weight.

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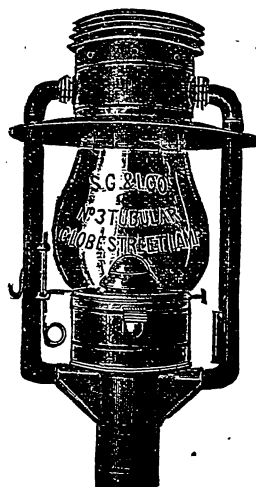
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Light your Streets and Driveways.

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Tubular Globe Street Lamp



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IS THE Best Street Lamp Manufactured.
Equal to the best Gas Light.
Will not Blow Out in the Strongest Wind.
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Automatic Extinguisher.
Outside Wick Regulator.
Will Burn Four Hours for One Cent.

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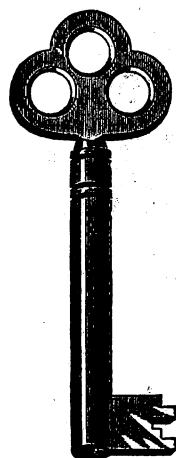
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CABINET LOCKS

OF EVERY KIND.



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A complete line of more than 1000 list numbers exclusive of our old
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YALE CABINET LOCKS.

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The only question is Is it Le Page's?

If it is you have made a sale. HUNDREDS of THOUSANDS of PLEASSED and SATISFIED CUSTOMERS testify to the merits of

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Don't let your customers go to another store for what they want, but **SELL THEM WHAT THEY ASK FOR.**

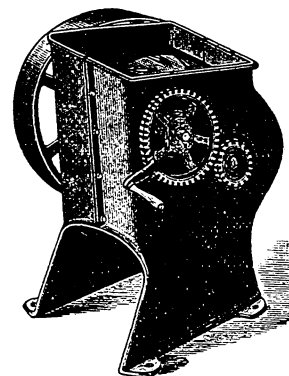
We can furnish original and attractive advertising matter for "LE PAGE'S GLUE" upon request.

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This cut represents our
RAPID ICE BREAKER,
combining several recent improvements as noted in
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For catalogue and discounts on

Ven'tilating Sash Lock and Fastener,
Diagonal S sh Lock and Fastener,
Extension Handle Couplings,
Galvanized Iron Window Cleaners,
Floor Scrubbers and Dryers,
Excelsior Bar Cleaners,
Combination Brush, Mop and Sponge Holder.



TRUCKS of all kinds. Mounted on rubber or iron wheels. Trucks made to order. Write for prices. Catalogues free.

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Manufacturers of Single and Double,
For fastening all kinds of Structure to Brick and Stone
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In this book the author lets the reader into the secrets of the accomplished and successful salesman, illustrates his tact and finesse, and tells how he masters men: but beyond this, the work embraces much information which will be instructive and useful to all classes of business men. Besides suggestions to buyers, it contains chapters on "Changes in Business Conditions and Methods," "Salesmen's Compensation," "Retain Merchants and Salesmen," "Saleswomen," "How to Read Character," with a collection of clearly and tersely put important Legal Principles and Decisions Governing Sales. Sent, post-paid, upon receipt of price, by

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Pumps, Hydraulic Rams, Garden Engines,

Yard Hydrants, Street Washers, Galvanized Pump Chain, Wind Mill Pumps and other Hydraulic Machines in the World.

DOUGLAS' DIAPHRAGM PUMPS, "Loud Patent."

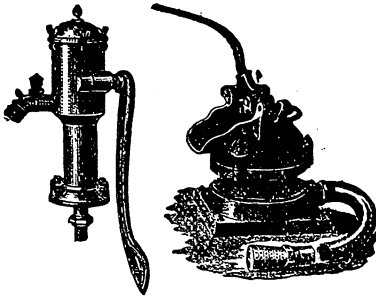
A LARGE CAPACITY AND EASY WORKING PUMP FOR

Water Works, Sewer Contractors, Foundation Builders, Mines, Quarries;

Fig. 209.

Fig. 381.

Fig. 145.



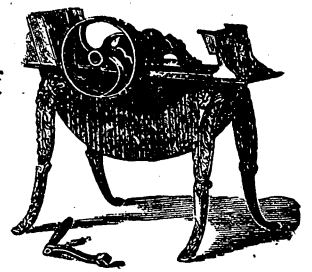
or wherever it is desired to raise a large quantity of water by
hand power.

The pump has large valves (accessible by hand), and will pump water containing sand, gravel, sewage matter, &c., without choking or any perceptible wear.

CAPACITY

from 3,000 to 4,500 gallons per hour.

These pumps are simple, durable and low priced.
Made either as shown in cut for Hose or for **IRON** Pipe Suction underneath.



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MANUFACTURERS OF
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The Leaders for 20 Years.

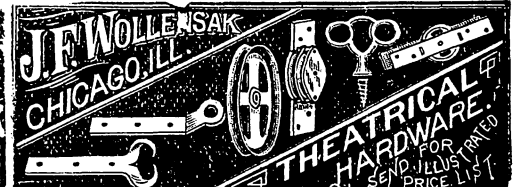
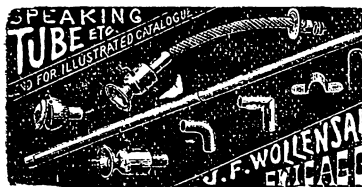
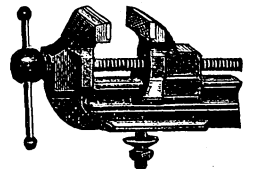
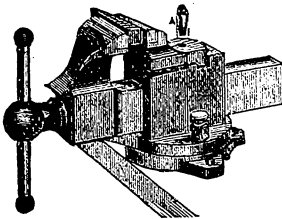
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PRENTISS VISE COMPANY,

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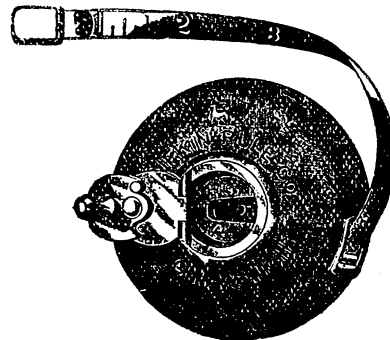
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Ashland Pump and Hay Tool Works.

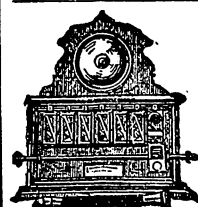
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Steel Measuring Tapes.



Entirely new. Handle or crank when closed is perfectly flush with leather case. Opens by pressing button on opposite side and folds out double, giving increased leverage. Best and most convenient steel tape on the market. Fully guaranteed. Will send samples on approval. We carry a complete stock of our goods at our New York Office, 20 Murray St.

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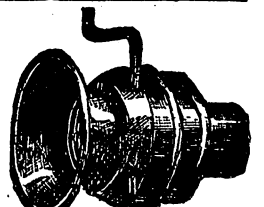


W. R. OSTRANDER & CO.,

204 FULTON STREET, NEW YORK,
Manufacturers of

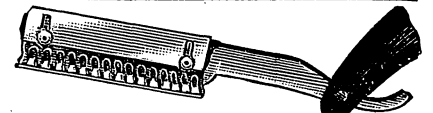
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Complete outfits of Speaking Tubes, Whistles Electric, Mechanical and Pneumatic Bells. A full line always in stock. Send for new catalogue. Factory, DeKalb ave. near Knickerbocker, Brooklyn, N. Y.



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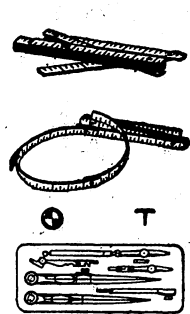
Paragon Self-Retaining Dumb Waiters,
HAND AND BELT POWER ELEVATORS,
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This Guard is the only Guard made that will fit any razor, and can be used right or left handed and never gets out of order. Price by mail 30c. Special prices to dealers.

P. D. MURPHY, 75 Main St., Lockport, N. Y.

The New York Safety Dumb Waiter.
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The Improved Humphrey Hand Elevator.
Made specially to be sold by Hardware Stores.
Thousands in use. Catalogues on application.
THE STORM MANUFACTURING CO.
NEWARK, NEW JERSEY.
Formerly of Poughkeepsie, New York.

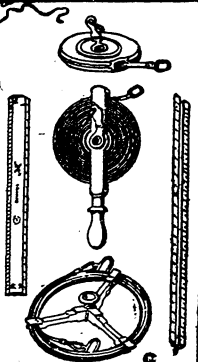


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MANUFACTURERS OF EXCELSIOR MEASURING TAPES.
SUPERIOR QUALITY, LATEST IMPROVED. GREATEST VARIETY.
STEEL · METALLIC · LINEN · POCKET TAPES.
EXCELSIOR BAND CHAINS FOR SURVEYORS, LAND CHAINS, &c.
K & E CO FOLDING POCKET RULES.
NO WARPING, NO SHRINKING, NO ILLEGIBLE JOINTS, NO BULK.
2 3 4 5 6 8 FOOT, ALSO WITH PATENT SPRINGS.
FLAT & TRIANGULAR BOXWOOD SCALES, BEST MADE.
PLUMB BOBS, THUMB TACKS, DRAWING INSTRUMENTS.

PRICE LISTS & QUOTATIONS PROMPTLY SENT.



IRON INSTEAD OF WOOD.

GALVANIZED IRON TUBING and CURB,

— FOR —
CHAIN PUMPS,
(Kegler's Patent)

Are Giving Universal Satisfaction,

BECAUSE:

They do not rust and accumulate filth—always clean. Extreme lightness is combined with strength and durability. No freezing. No waste of water by reason of enlarged reservoir at top of tubing. No annoying wheel at bottom. Easy to handle.

Tubing weighs less than 1/4 lb. per ft., is connected by couplings and can be attached to any make of curb.

Send for Catalogue.

Bellevue Pump Co., Bellevue, Iowa.

STANDARD TOOL CO.

MANUFACTURERS OF

Mechanics' Fine Tools.

ATHOL, MASS., U.S.A.

EVERY TOOL WARRANTED.

Catalogue Free.

Athol Machine Co.,
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HOLLANDS' OFFSET JAW VISE.

Specially adapted for drill press work where chucks cannot be used and equally good for special or regular bench work.

Hollands Mfg. Co.,
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Manufacturers all styles VISES.



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MANUFACTURERS OF **MALLETS.**
Also Cotton and Bale Hooks.

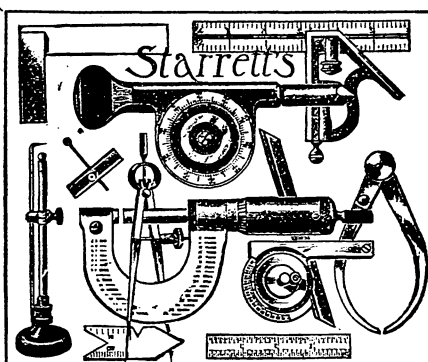
Patented Feb. 13, 1877, a new combination of Hooks.

456 E. HOUSTON ST.,
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Skilled mechanics prefer them Live dealers sell them

STARRETT'S

Best in workmanship
Finest in finish
Latest in improvements



For all workers in metal or wood
Every tool warranted satisfactory

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Send for Catalogue L. S. Starrett, Athol, Mass.

ELKINS' PATENT SAW FILER & CLAMP.



IT SELLS All the Time!

Price Reduced.

Will Hold and File a Saw, to PERFECTION!

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Blind Hinges, Gate Hinges, Door Butts,
And other **HARDWARE SPECIALTIES,**
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SAWS

WENTWORTH'S PATENT NOISELESS SAW VISES,

WITH RUBBER CUSHIONED JAWS.

Prevent all vibration and render Saw Filing noiseless. Will make no more noise than Filing on a Solid Piece of Iron.

Have a Larger Sale than All Other Kinds Combined.

PRICE LIST.

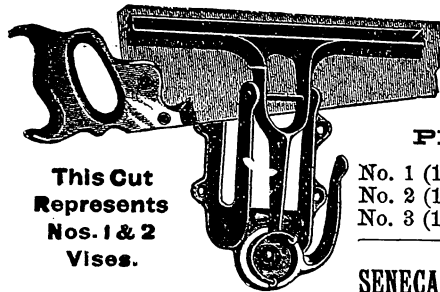
No. 1 (11 inch Jaws),	-	\$15.00
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LIBERAL DISCOUNT TO THE TRADE.

LONGEST JAWS, HEAVIEST AND BEST FINISHED. Sold by all leading jobbers of general Hardware at Factory Prices.

—MANUFACTURED BY—


SENECA FALLS MFG. CO., 255 Water St., Seneca Falls, N. Y.



This Cut Represents Nos. 1 & 2 Vises.




No. 3 Vise.




1

WM. KROGSrud,
Engraver and Die Sinker,
61 Fulton St., N. Y.
Manufacturer of
STEEL STAMPS
For Every Purpose.
Steel Letters and Figures.
Burning Brands, Stencils,
&c. Send for Illustrated
Catalogue.



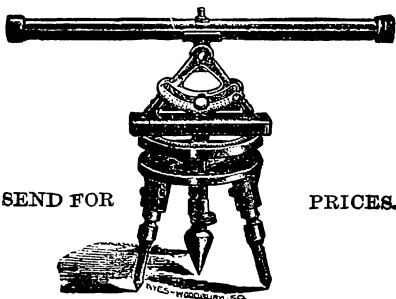
3



3

NICKLE, Silver and Bronze Metallic
Figures and Letters, Sizes $\frac{1}{16}$ in to 3 in.
Pattern Letters, Steel Stamps, Brands
Dies &c. Send for Reduced Price List.
We make a specialty of the Hardware Trade.
A. A. WHITE & CO., Providence, R.I.

ARCHITECTS' & CARPENTERS' TRANSIT,



SEND FOR

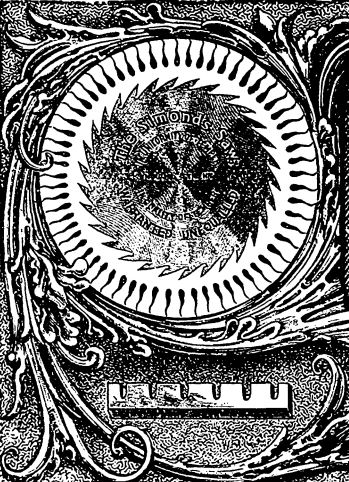
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C. F. RICHARDSON & SON, Athol, Mass.
Manufacturers of Iron Levels
and Leveling Instruments.

NOVELTIES,
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ARTICLES and
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MADE TO ORDER. SEND FOR ESTIMATE.

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THOMAS CLARKE
HARDWARE AND GENERAL AGENT.
(FIRST-CLASS REFERENCES.)
60 PRINCE WILLIAM ST., ST. JOHN,
NEW BRUNSWICK.



· WITHOUT A PEER ·

CRESCENT GROUND

· THE SIMONDS ·

CRESCENT GROUND

CROSS CUT SAW.

Simonds Mfg. Co. Simonds Saw Co.
FITCHBURG, MASS. CHICAGO, ILL. SAN FRANCISCO CAL. PORTLAND, ORE.

The Taintor Positive Saw Set

Mechanics are now inquiring for this tool, and Hardware Dealers should have them in stock, or at least have a sample.

For Prices and Discounts, address

WIEBUSCH & HILGER, LTD., SOLE AGENTS,
84 and 86 Chambers Street, **NEW YORK.**



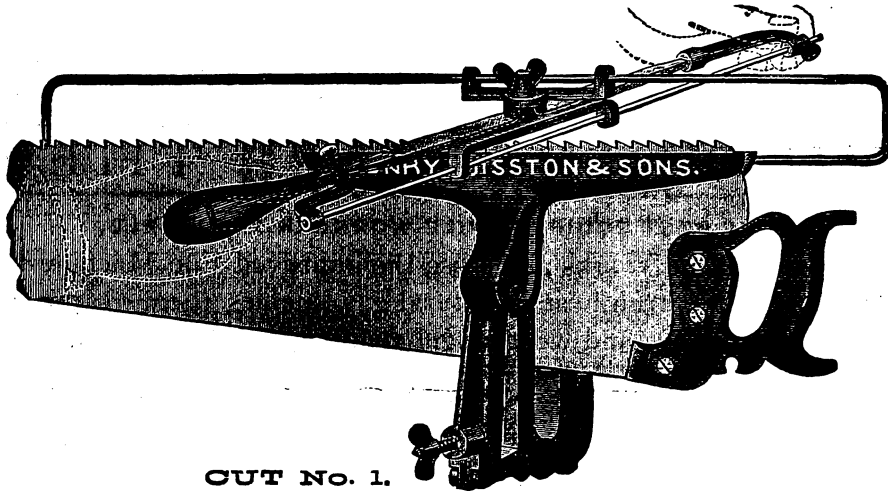
J.F. Wollensak
CHICAGO, ILL.



J.F. Wollensak
CHICAGO, ILL.

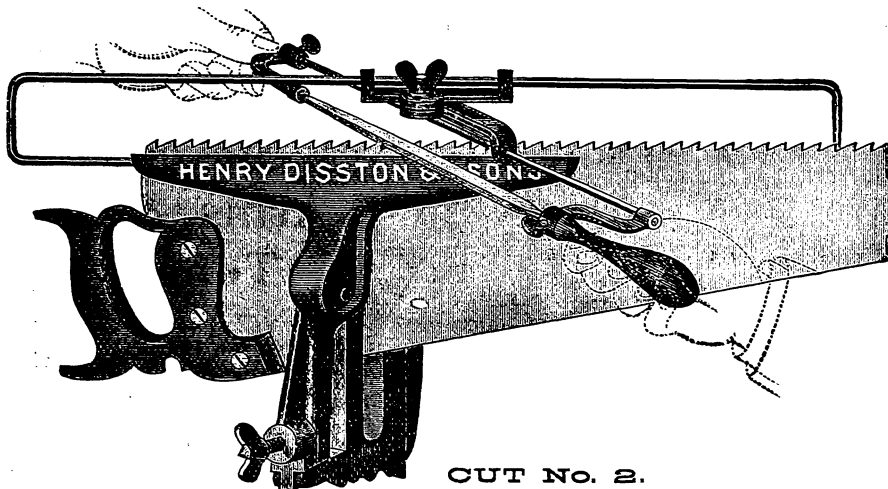
DISSTON'S Improved Saw Clamp AND FILING GUIDE.

ESPECIALLY DESIGNED TO ASSIST THOSE NOT SKILLED IN THE ART
OF SAW FILING TO FILE A SAW CORRECTLY.



CUT NO. 1.

Cut No. 1 shows a saw and the attachment in proper position for filing the first side; and Cut No. 2 shows the saw and attachment reversed and in position to file the second side. There are three marks on one of the hubs of the swivel attachment, and one mark on the other. One of the three marks shows when it is in position No. 1, and the other designates when it is in position as shown in No. 2. The third, or centre, marks show when it is in position for filing Rip Saws.



CUT NO. 2.

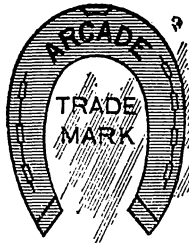
To obtain the correct position, loosen the wing nut and move the guide around to the point desired; after tightening wing nut, loosen screw in file handle, then turn handle until file gives the shape tooth wanted.

A good way is to select a tooth of correct shape and let file down into it, tighten set screw in handle, then file a tooth to see if the shape suits. If not turn the file a little to the right or left and try another tooth until the proper shape is obtained. Then file every other tooth, see cut No. 1; when one side is filed, reverse saw and attachment and adjust as in No. 2, and file the other teeth. For Rip Saws, place the file at right angles with the saw and file every tooth. Always keep the file as nearly horizontal as possible.

This filing guide is sold only attached to our No. 3 Improved Clamp or Vise, and not sold separately. We recommend this as the best saw clamp on the market, being quickly and easily adjusted, and not liable to get out of order.

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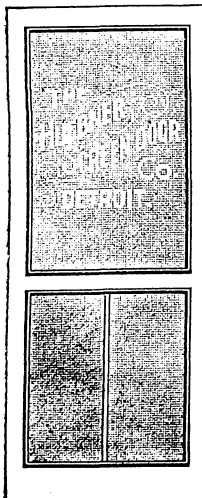
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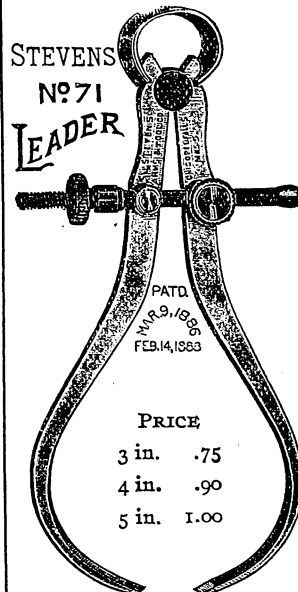


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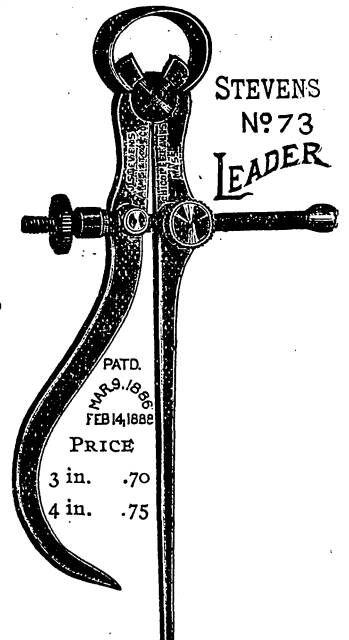
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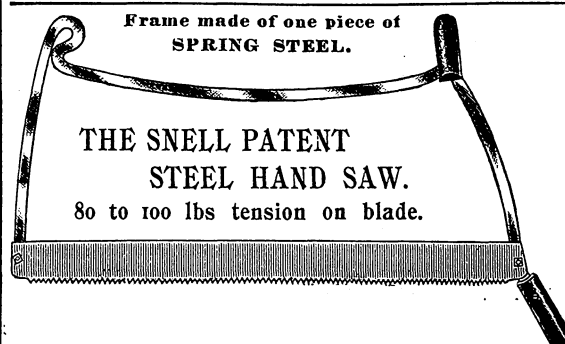
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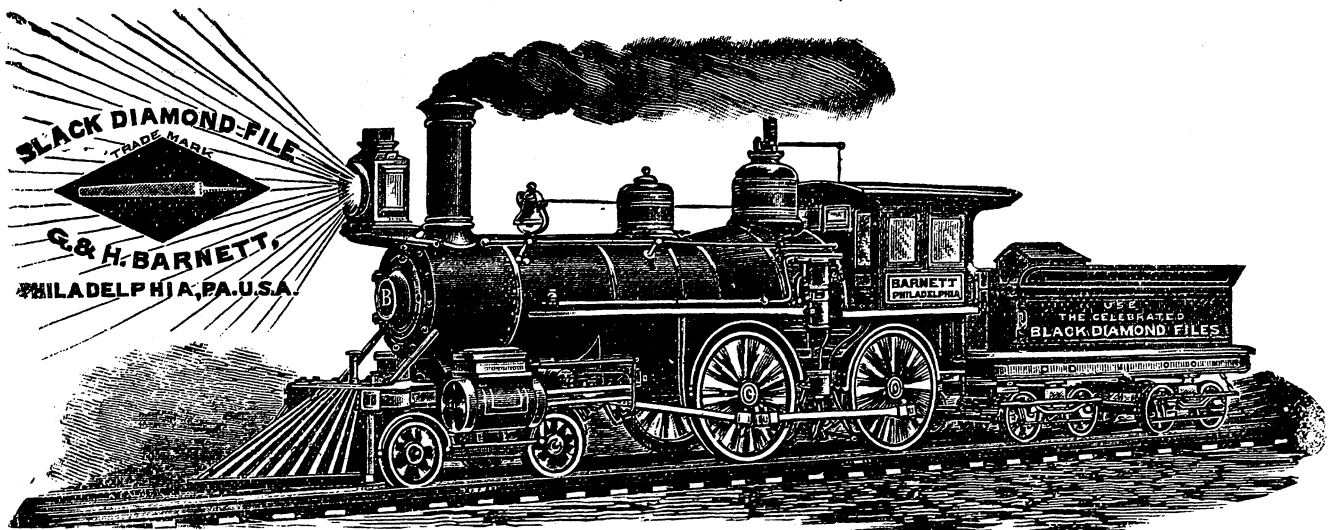
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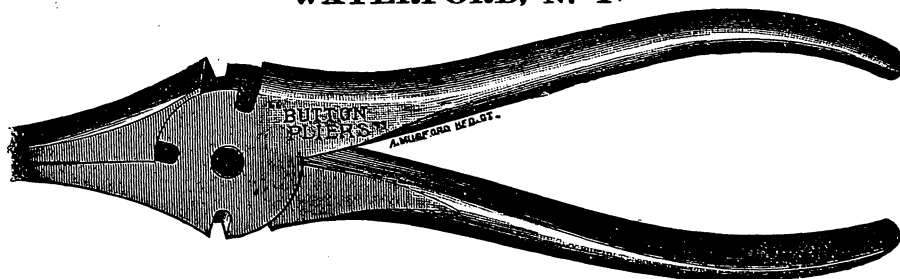
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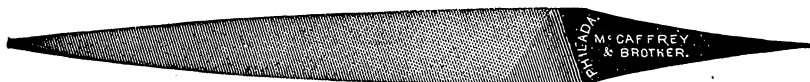
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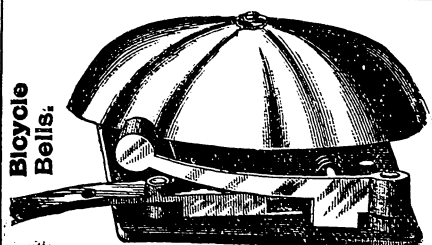
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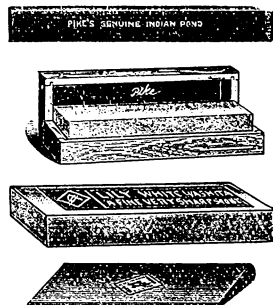
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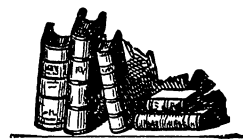
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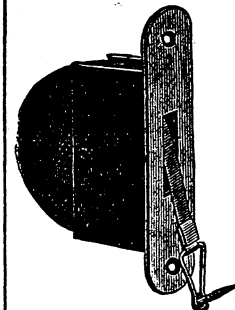
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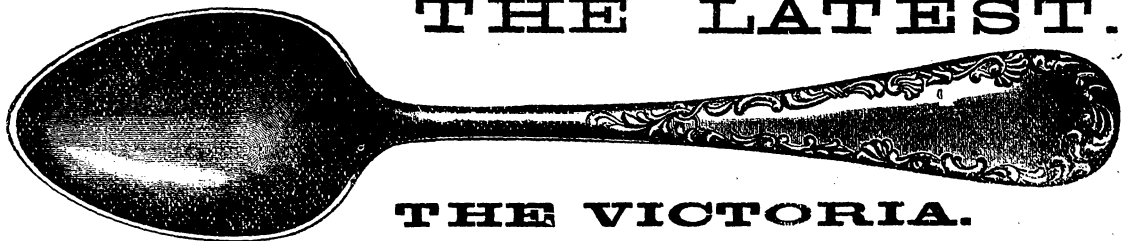
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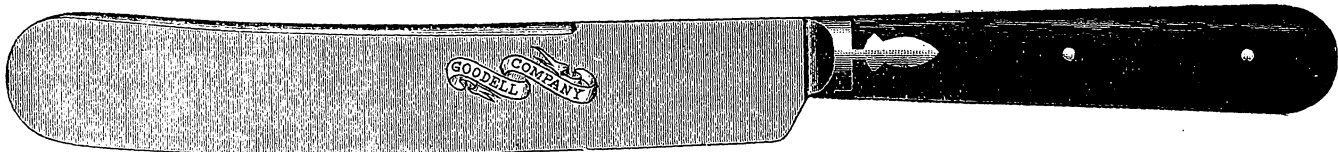
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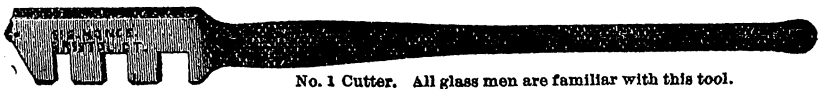
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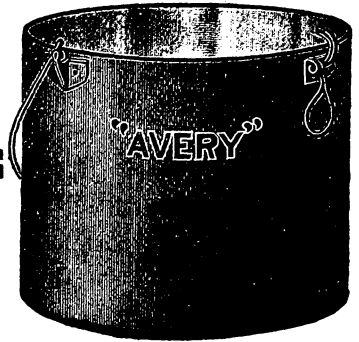
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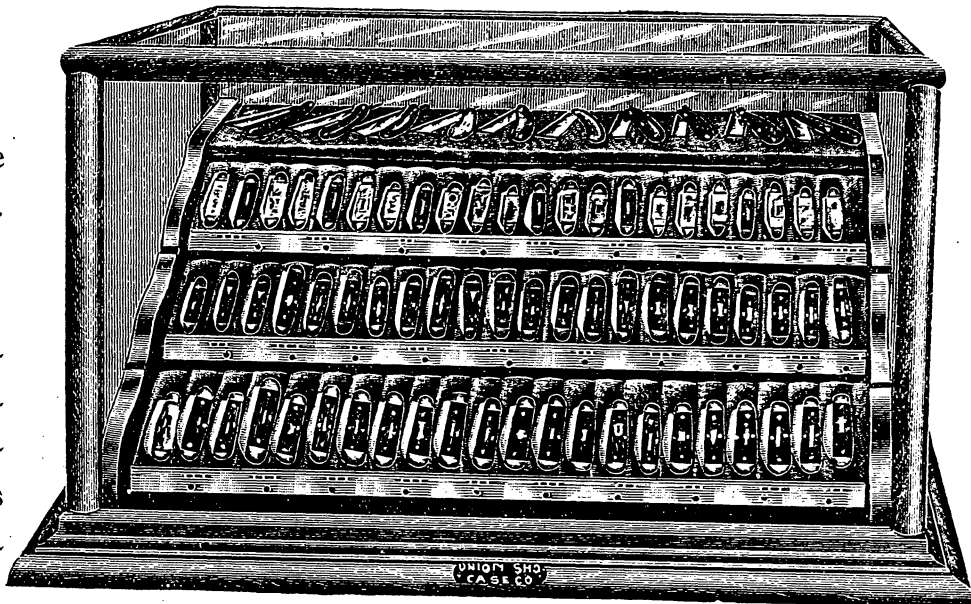
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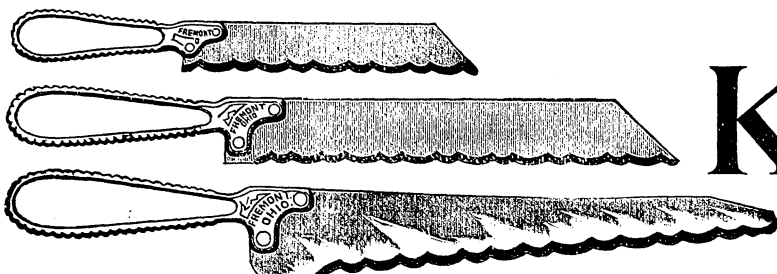
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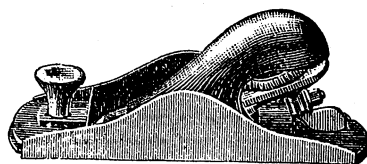
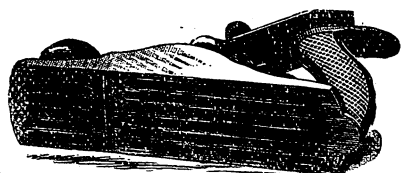
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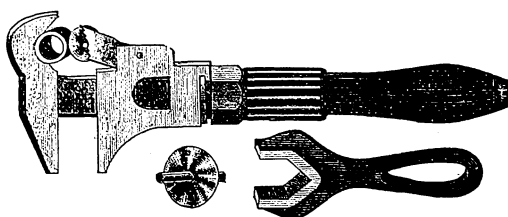


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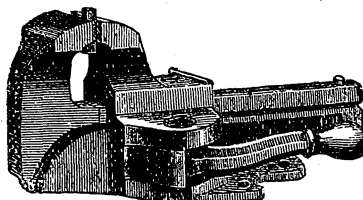


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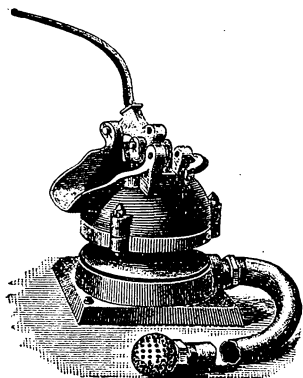


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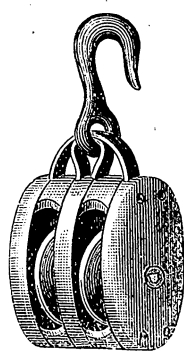
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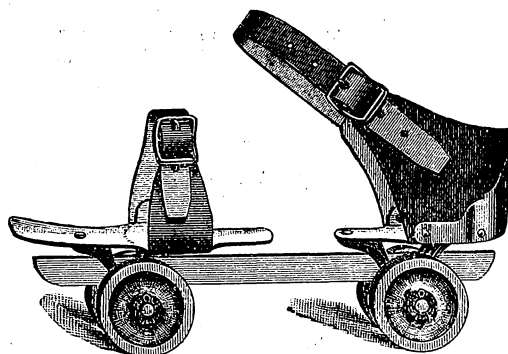
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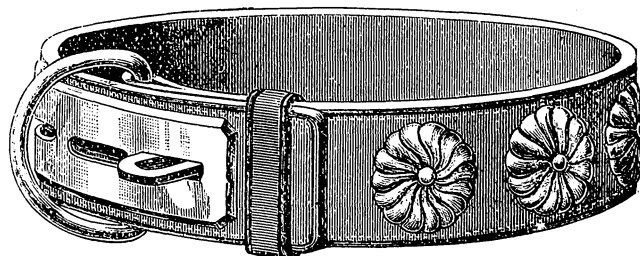
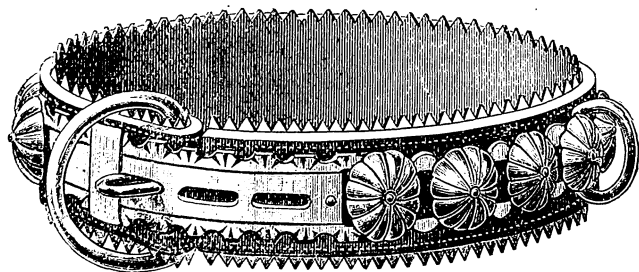
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Side-Walk and Rink

ROLLER SKATES.

A Full Line of Dog Collars, Muzzles, Leads, Etc.



UNION HARDWARE CO., - TORRINGTON, CONN.

New York Office, TOWER & LYON, 95 Chambers St., New York.

This is the Season when Sportsmen want

GUNS.



Hardware Merchants should have in stock the

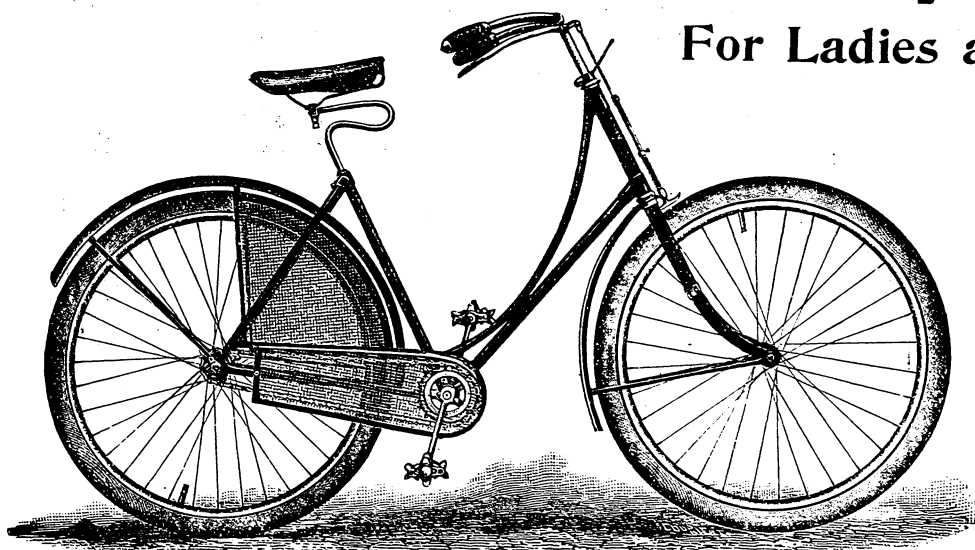
"OLD RELIABLE" PARKER GUNS.

They are the strongest shooting and best Guns made. Catalogue of prices and information upon application to

PARKER BROS., - 48 ELM ST., MERIDEN, CONN.

New 1894 "Queen City" Safety.

For Ladies and Misses.



Full Ball Bearings
Throughout.

*In all respects
a first-class
machine.*

MANUFACTURED BY

GEO. N. PIERCE & CO.,

BUFFALO, N. Y.

OUR
AMERICAN

And Safety Hammer

Double Action in 32, 38 & 44 Cal.

H. & R. Imp. Ejecting Double Action,

H. & R. Imp. Automatic Double Action,
In 32 and 38 Caliber.

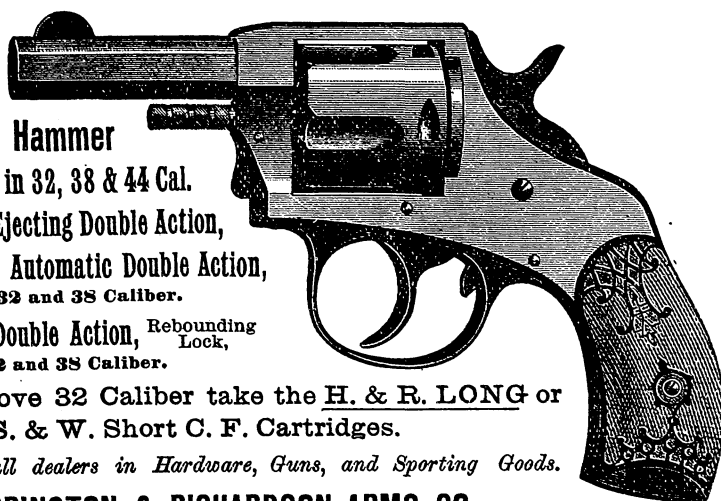
And Premier Double Action, Rebounding
Lock,
In 32 and 38 Caliber.

All the above 32 Caliber take the H. & R. LONG or
S. & W. Short C. F. Cartridges.

For Sale by all dealers in Hardware, Guns, and Sporting Goods.

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BRIDGEPORT CYCLOMETER. \$3.50.



Registers 1000 miles accurately and repeats, or can be set back to zero at any time. Perfectly Noiseless, Dust Proof and Water Proof. Nothing to get out of order and can be adjusted to any wheel. A high grade cyclometer within the reach of every bicyclist.

PRICE \$3.50. Made in two sizes, viz.: for 28-inch and 30-inch wheels. Send for catalog of sundries. Sold by all bicycle dealers. Cyclometers will be ready for delivery April 1.

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313 and 315 Broadway, New York.

Yacht AND Boat Hardware.

L. W. FERDINAND & CO.,
BOSTON, MASS.
Send for 226-Page Catalogue.



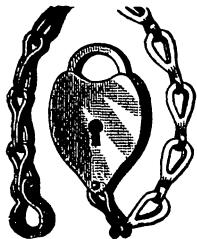
To Make a Bull's Eye

In Your Business or at the Range?

If you deal in ARMS or AMMUNITION or shoot a Rifle, Pistol or Shot Gun, you will make a HIT by sending for the IDEAL HAND BOOK.

IDEAL MFG. CO., New Haven, Ct., U. S. A

Please mention *The Iron Age* when you write.



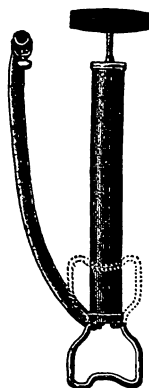
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Bicycle Bells.

Especially Low Prices

We manufacture hardware specialties of all descriptions to order.

HAINES & ZIMMERMANN, 407 Cherry St., Phila.



HEATH'S BALL VALVE PUMP AND UNIVERSAL COUPLING, For Bicycle and Sulky Wheels.

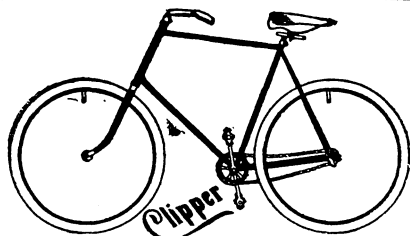
The handiest, windiest, strongest pump in the world at any price.

Price \$2.00.

Liberal discount to the trade.

Manufactured by

S. F. HEATH CYCLE CO.,
Minneapolis, Minn.



Clipper Bicycles

are built to please the dealer and rider.

Are you in the bicycle business? If not, you can make it pay to handle Clippers. Buy direct from the manufacturer and save the jobbers' profit. It will add considerable to your bank account. We want responsible dealers only. We may be able to interest you, in fact we are sure of it. Our policy is a protective one, and will please you. It protects against Scalpers and "Curb Stone Brokers."

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Grand Rapids, Mich.

Every Year

the "STERLING" becomes more popular with dealers. They find it gives better satisfaction than any other wheel. No worry over repairs.

THE STERLING (Built like a Watch.)

A wonderful, strong, light wheel, with a dozen points of superiority over all others. Our "new departure" catalogue (free) tells all about it.

STERLING CYCLE WORKS,
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THE BEST JUVENILE BICYCLES

At a Lower Price than Poor Machines can be Bought.

FALCON JUNIOR for boys. 24 in., weldless tube, all steel, 1½ in. Whippet pneumatic tire.

FALCON JUNIOR COMBINATION for boys and girls. 24 in., weldless tube, all steel, 1½ in. Morgan & Wright pneumatic tire.

We have closed out all our other styles and these are going. There is nothing like them at any price and no other price as low.

THE W. BINGHAM COMPANY, CLEVELAND, OHIO.

DO YOU HANDLE BICYCLES? IF NOT, WHY NOT?

Handle
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Bicycle
that is a
Money
Maker.

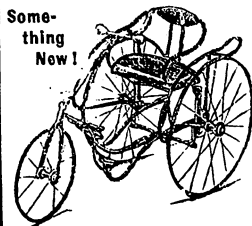
The Wellington Is a Sure Winner!

2 SIZES. No. 1, \$125.00, Weight 28 lbs.

No. 2, \$100.00, Weight 31 lbs.

Write for Terms and Discounts to Agents.

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WESTERN BRANCH, UNION CYCLE MFG. CO.



THE "PERFECTION"

Girl's
Ball
Bearing

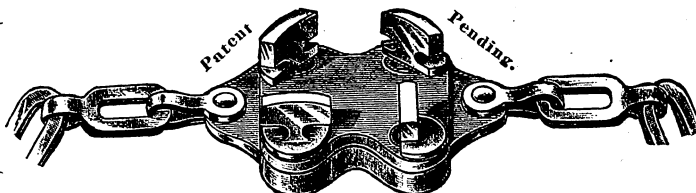
Run as easily as Bicycles. Do not require any adjustment, and cannot get out of order. Sold by Toy and Hardware Jobbers. Manufactured by

The Toledo Metal Wheel Co., Toledo, O. Tricycles.

THE GOODHUE COMBINATION LOCK.

A KEYLESS LOCK FOR CYCLISTS, TRAVELING MEN, ETC.
EASILY OPERATED IN THE DARK.

Strong.
Highly
Finished.

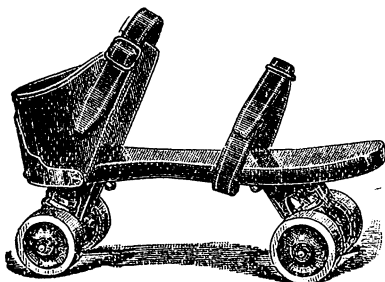


No
Two
Alike.

Special Design made for "Lockers."

List, \$1.00. Good Discount to Dealers. Manufactured and sold by
THE INDEPENDENT ELECTRIC CO., - 39th St. and Stewart Ave., Chicago.
PARKHURST & WILKINSON, General Western Agents.

HENLEY'S - Rink AND Club CELEBRATED Roller Skates.



A full, new and complete stock of Roller Skates, Skate Repairs and Rink Supplies. Address for 80 page Catalogue and Prices,

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RICHMOND, - - - IND.

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Littlefield's Collapsing Net Ring and Staff,

The Latest and Best Ring on the Market.

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Worcester,



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CATALOGUE FREE

The most extensive Skate Factory in the World.



Maverley

None Higher in Quality.

85 Dollars

Fitted with "G. & I." Tires.

We are desirous of securing a first-class representative in every city, town and hamlet in the United States, and will guarantee the best bicycle in the world for the money. Dealers should investigate our line if they are looking for a leader that will sell itself and make them money.

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THE CRAWFORD MFG. CO.

MAKERS OF
HIGH GRADE AND JUVENILE

BICYCLES,

FACTORY, HAGERSTOWN, MD.

NEW YORK OFFICE, 72 READE STREET. L. B. Whympers, Mgr.

WE ARE HEADQUARTERS ON

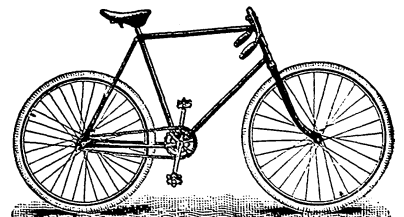
Plated Knives, Forks, Tea Spoons, Table Spoons, Dessert Spoons, Coffee Spoons, Bar Spoons, Julep Strainers, Ice Cream Spoons, Orange Spoons, Sugar Shells, Butter Knives, etc., etc., etc.

Our unplated nickel silver goods light and heavy, are the best in the market, so our customers say, and they ought to know.

Write us for Prices and be Convinced.

KELLEY & McBEAN, Niagara Falls, N. Y.

Remington
Cycles.

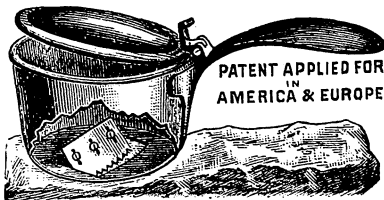


In Design, Workmanship, Material and Finish they are BEST.

SEND FOR CATALOGUE.

Remington Arms Company

313-315 Broadway, New York.



PATENT APPLIED FOR
IN
AMERICA & EUROPE

Ice Shredders.

For Shaving Ice

Coarse or Fine.

PRICES:

No. 33, Tinned, - - \$7.20 per doz
No. 34, Nickeled, - - 24.00 "

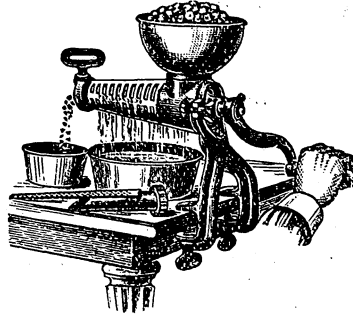
Their use will be appreciated

For Fruits, Drinks, Oysters and
Clams on the half shell,
Olives, Celery, Radishes,
Iced Tea, Sliced To-
matoes, &c., &c.
and for many purposes in the
Sick Room.

The Enterprise M'fg Co. of Pa.

Third and Dauphin Sts., Philadelphia, Pa.

Fruit, Wine and Jelly Press.



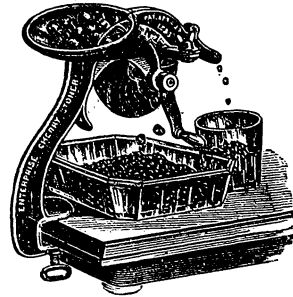
INVALUABLE FOR MAKING
Wines, Jellies and Fruit Butters.
Send for Catalogue (Free).

Cherry Stoners.

PRICES.

No. 1, Japanned, - - \$7.50 per doz.
No. 2, Tinned, - - 9.00 "

Can be adjusted by thumb screws
to adapt them to the different sizes of
Cherry Stones, and will be found
very rapid in their work and equal to
the best in the market.



You ought to.

A GREAT many merchants are using
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Every day adds to the number of those
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last for years, you can depend upon
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You ought to.

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Publisher and Bookseller,

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The New Britain Hardware Mfg. Co.

New Britain, Conn., U. S. A.

—MAKERS OF ALL KINDS OF—

Special Machine Screws, Studs, Bolts, &c
BICYCLE PARTS,
SPECIAL HARDWARE.

Pattern Makers' Dowels and Emery Wheel Dressers
Electro, Brass and Nickel Plating.

THESE ARE "STIRRING" TIMES. - - -



"IT'S A COLD DAY"
WHEN A GOOD FREEZER IS NOT WANTED.

THE "OHIO"
ICE CREAM FREEZER
STIRS: FROM: THE: BOTTOM.

HAS ALL NEEDED MOTIONS.—NO MORE.

Has all the good points.

None of the bad. - - -

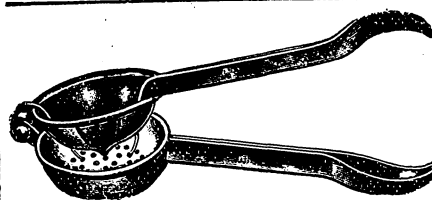
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express prepaid, east of Kansas City.

MADE IN ALL THE SIZES.

—MANUFACTURED BY—

The Sam'l C. Tatum Co.,

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Do you make Lemonade?

If so you want our Squeezer. Positively
the best. Suitable for any size Lemon.
Write for catalogue and prices.

BERGER BROS., 237 Arch St., Philadelphia, Pa.



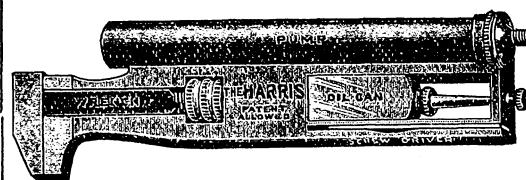
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Ingots, Sheets, Rods, Tubes, Wire and Castings,
Cooking Utensils and Tableware,
Tea and Coffee Pots, Chafing Dishes, Rice Boilers, &c.

Write for catalogue.

THE WOHLER ALUMINUM COMPANY,
55 Jackson Street, - - - - - Chicago, Ill.

HARRIS COMBINATION WRENCH.



**Wrench, Oil Can, Screw
Driver and Pump all
combined in one.**

Made of drop forged steel, case
hardened; weight, 10 ounces or 3
ounces less than all the other tools
separate.

Electrotypes on Application. Send for Descriptive Circular.

HARRIS MANUFACTURING CO.,

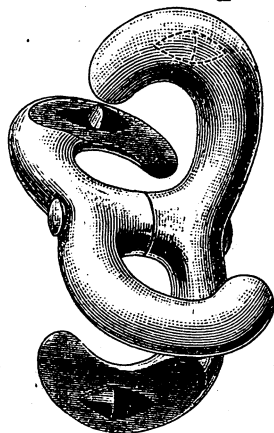
381 Main St., Buffalo, N. Y.

The "Missing Link" Found at Last.

— THE —

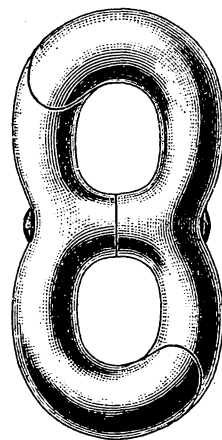
"Keystone" Open Link.

PATENTED.



OPEN.

It is the Best, Strongest, Quickest to adjust and only "OPEN LINK" DROP FORGED FROM BAR STEEL on the market. Requires no tools to adjust, is not affected by heat or cold, and cannot work loose, open or fall out while in use.



CLOSED.

The best article of the kind ever offered for Mending, Splicing, Shortening, or Lengthening, and Connecting Up Chains of all descriptions.

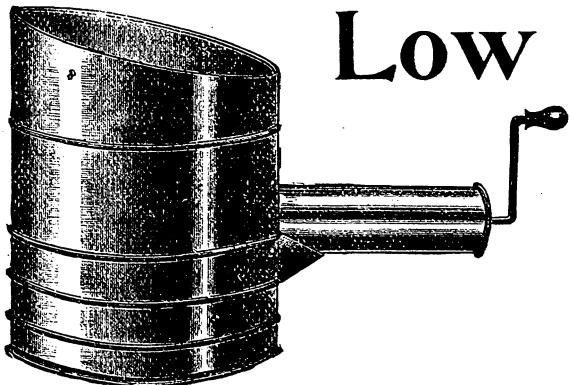
Made up in five sizes, 1-4 inch, 5-16 inch, 3-8 inch, 7-16 inch and 1-2 inch, and neatly packed in boxes of one dozen of a size.

MANUFACTURED ONLY BY THE

PHILADELPHIA DROP FORGE CO.,

2348 AMERICAN STREET, PHILADELPHIA, PA.

Ask your jobber for them and insist upon having no other, or send us six cents in stamps for sample link.



Low Prices.

WRITE TO KNOW THE
RECENT CHANGES.

OUR FOUR STYLES OF SIFTERS
ARE GUARANTEED TO BE ALL

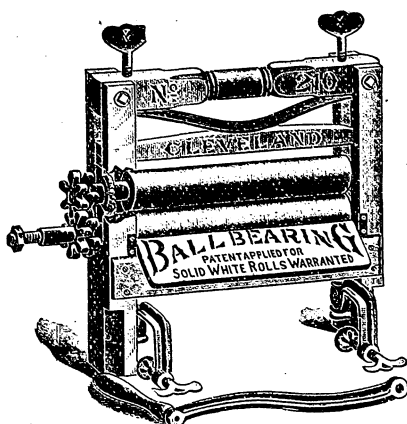
High Quality.

Dealers everywhere are entitled to New Catalogue
and New Prices.

Bromwell Brush & Wire Goods Co.,

Established Seventy-six years.

Cincinnati, O.



A GOOD PROFIT TO DEALERS

This Wringer has **BALL BEARINGS** same as a bicycle. Runs so easy it's play to use it. No other like it. Best made. Sells for more than the common kind. Women using it won't have any other, tell their neighbors, sales increase, everybody satisfied. Pays you to push it.

SEND FOR SAMPLE.

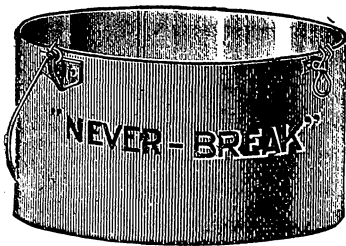
THE PEERLESS MANUFACTURING CO.,

CLEVELAND, OHIO.

We also make High Grade Bicycles.

OSGOOD & HOWELL, Pacific Coast Agents,

132 Market St., San Francisco, Cal.



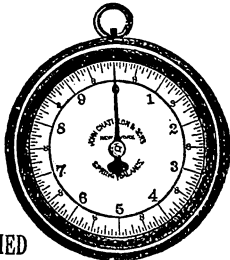
'NEVER-BREAK'

WROUGHT STEEL COOKING UTENSILS.

MIRROR POLISHED-TINNED-PORCELAINED.

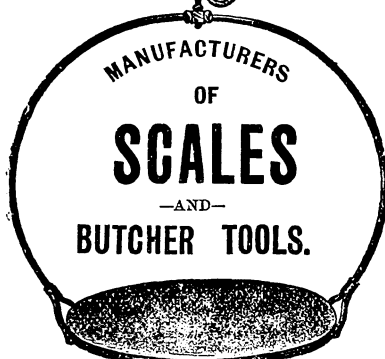
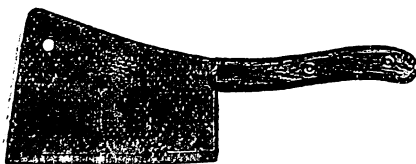
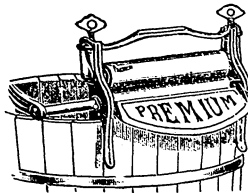
"EXCELSIOR"BAKING AND ROASTING PANS,
PLANISHED AND PLAIN STEEL.**"PURITAN"**COOKERS, COFFEE POTS AND
OTHER SPECIALTIES.**"IDEAL"**BRASS, BRONZE, NICKEL UM-
BRELLA STANDS, CUSPIDORS,
ETC., ETC., ETC.**THE BRONSON SUPPLY CO.,**
NEW YORK AND CLEVELAND.**Porcelain Lined Lemon Squeezers**Best Common Mouse Traps, Steak Hammers,
Boot Jacks, Lap Boards, Beacon Hill Pat. Mouse
Traps, Mallets, Bung Starters, Hand Screws.
Ripley Mfg. Co., Unionville Conn.**IT PAYS.** Nothing about a Hard-
ware Store looks so
well as clean shelves and the goods neatly boxed
with a fresh sa mph on the front. Customers
are attracted by such a display of care, and no-
tice and buy things that would ordinarily go
without notice. The Boxes are inexpensive,
save the goods, make a big show for a small in-
vestment and help the salesmen. Send to
**JESSE JONES & CO., 615 and 617 Com-
merce St., Phila., Pa.,**
for Catalogue of prices styles, and references.**John Chatillon
& Sons,**

85, 87, 89, 91, 93 CLIFF ST, NEW YORK.



ESTABLISHED

1835.

SEND FOR
PRICE-LIST.Sole Agents for
Foster Bros.' Butchers' Cutlery.**John Chatillon & Sons, N. Y.****COLBY WRINGER CO., - Montpelier, Vt.**

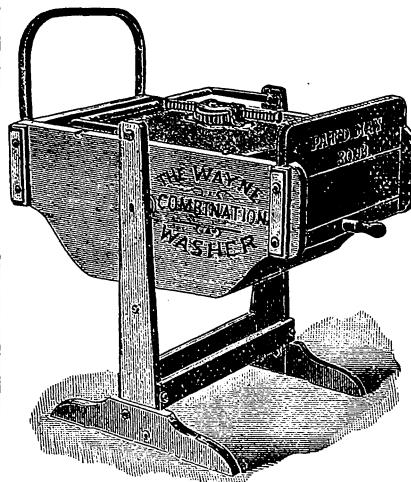
MANUFACTURERS OF THE

Premium Wringer,

With Automatic Apron Adjustment.

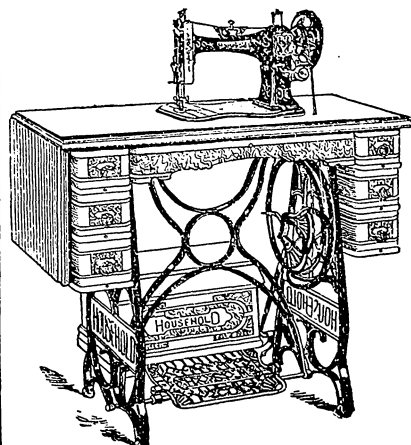
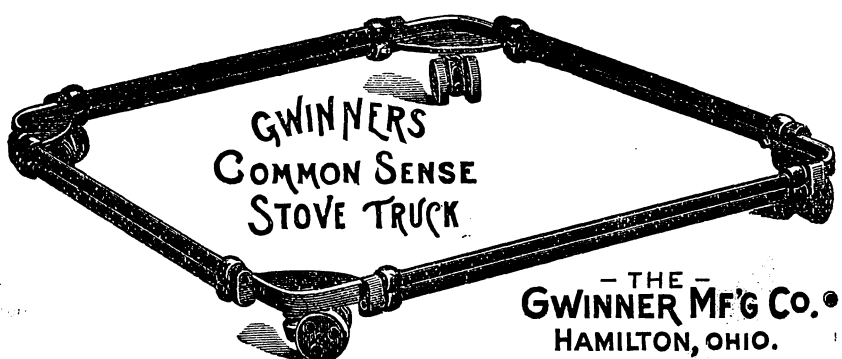
SURPLESS, DUNN & ALDER, Direct Representatives,

15 Murray Street, New York.

**THE WAYNE Combination
WASHER**Operates one third easier than
any other machine takes less
water, is the simplest and in all
is warranted the best washer of
the large family of washers now
on the market.

No Dealer Should be Without it.

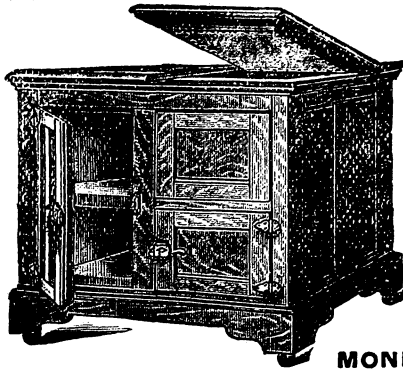
For Prices and Discounts write

Anthony Wayne Mfg. Co.,**FT. WAYNE, IND.****THE EASY RUNNING
"HOUSEHOLD" SEWING MACHINE**Received Highest Award at the
World's Fair.Unequaled for Capacity, Simplicity, Du-
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world.Dealers wanted in all unoccupied terri-
tory.**Household Sewing Machine Company,**
Providence, R. I.9 East 14th St., New York. 40 West St., Boston.
141 Lake St., Chicago.**THE
GWINNER MFG CO.®**
HAMILTON, OHIO.

To YOUR Interest !

A FAC-SIMILE OF THE ADVERTISEMENT WITHIN THE MARGINAL LINES BELOW WILL APPEAR DURING THE RETAIL SEASON IN MOST OF THE LEADING MAGAZINES AND HOUSEHOLD PUBLICATIONS.

WOULD IT NOT BE TO YOUR INTEREST AS A DEALER TO PREPARE



The superiority of Stoneware Lining in Refrigerators becomes obvious at a glance. It neither sweats nor absorbs moisture and never becomes sour or musty. It is made without open seams; is practically indestructible and is very easily cleaned.

Stoneware Lined Refrigerators

are built upon the best known principles of refrigeration. A perfect circulation of dry, cold air prevents the accumulation of gases and vapor or the mixture of flavors, while the consumption of ice is greatly reduced. The first cost is greater than for ordinary refrigerators but they are far cheaper in the end. If your dealer don't keep them, write for Catalogue. We pay the freight.

MONROE REFRIGERATOR CO.,

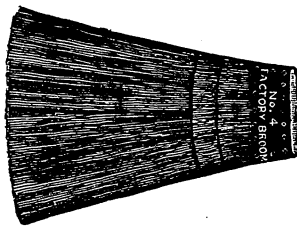
LOCKLAND, OHIO.

IN GOOD TIME FOR THE DEMAND THAT WILL THEREBY BE CREATED ?

AS A RULE

WE SELL BUT ONE DEALER IN A TOWN, AND WILL NOT SELL TO CONSUMERS IN PLACES WHERE OUR GOODS ARE SOLD BY DEALERS, BUT WILL REFER INQUIRIES TO THE DEALERS.

WRITE FOR CATALOGUE AND TRADE DISCOUNTS.



No. 4 FACTORY CORN BROOM.

Designed for light work in Woolen, Cotton, Knitting, Cloth and Yarn Mills, and for purposes where a light, strong, cheap and good

JOS. LAY

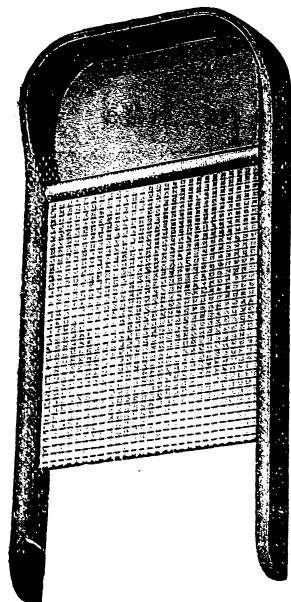
& CO.,

RIDGEVILLE, IND.

sweeping broom is required. It has been thoroughly tested in the above mentioned establishments, and has proven to be the best ever made. Consumers should give them a trial. The increased wear they will stand will repay the investment. We also make a full line of

Brooms for other purposes, and Brushes. Write for prices.

The Utility Washboard



Is a Zinc Board made from best quality No. 6 Zinc, the heaviest and strongest Zinc in use for Washboards.

CRIMP—The Crimp is our Improved Deep Globe, acknowledged far superior to any now in use on other boards.

OFFERS—absolute protection from water at sides as well as the top of the soap board.

WHY?—Because being made of one piece which is bent thin and broad at the sides and top of soap board where all splashing occurs, it is impossible in washing to splash over it.

CONSTRUCTION—The Board in point of construction excels anything of its kind ever produced. Its lines present a symmetry and regularity pleasing to the eye, and in point of strength is unquestionably superior to any.

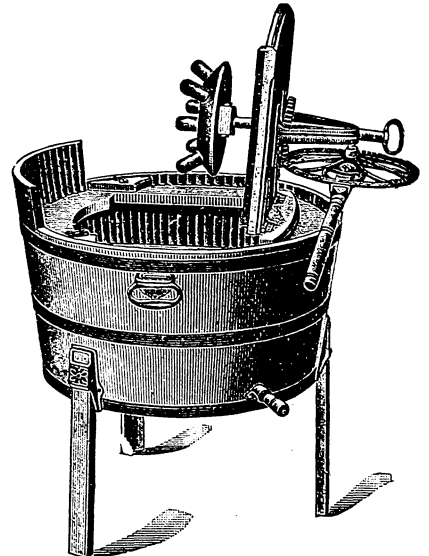
SALES—Where these are offered for sale competing boards are not "in it."

MANUFACTURED BY

Olds Wagon Works,

Fort Wayne, Ind., U. S. A.

The Corrugated Round Washer.



Our Special Construction, Superior Workmanship, Beauty of Finish, and recent Patented Improvements,

Cause thinking dealers to investigate this washer, with but one verdict—

IT IS PERFECTION.

Write for bottom prices.

DIETHER & BARROWS, Fort Wayne, Ind.

HOW TO KEEP A STORE

BY S. H. TERRY.

406 PAGES, 5 x 7½ INCHES.

POST-PAID, \$1.50.

Among the subjects discussed are: The selection of a business; choice of a locality; buying a stock of goods; examining, marking and arranging goods; how to advertise; employment of clerks; selling for cash and credit; keeping accounts; expenses; copartnerships; losses by fire, theft, &c.; influences of social life on business; buying at auction; investment of profits; insolvency; business qualifications

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Hudson's Garden Hose Mender

So Simple a Child Can Use It.

Made in three sizes, for ½ in., ¾ in. and 1 in. hose.

Put up in Boxes for Family use.

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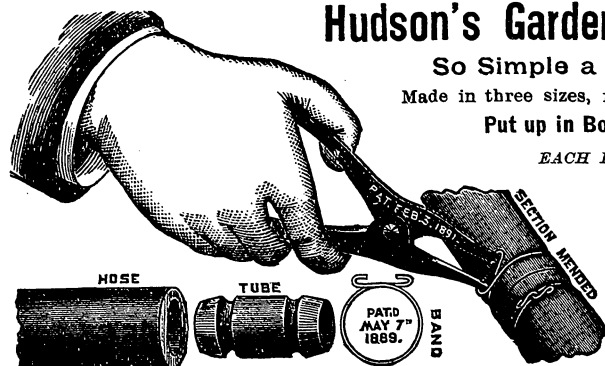
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20 Bands,

6 Tubes.

Sells readily at 75 cents. Liberal discount to Dealers.

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NEW DEPARTURE "ROTARY" DOOR BELLS

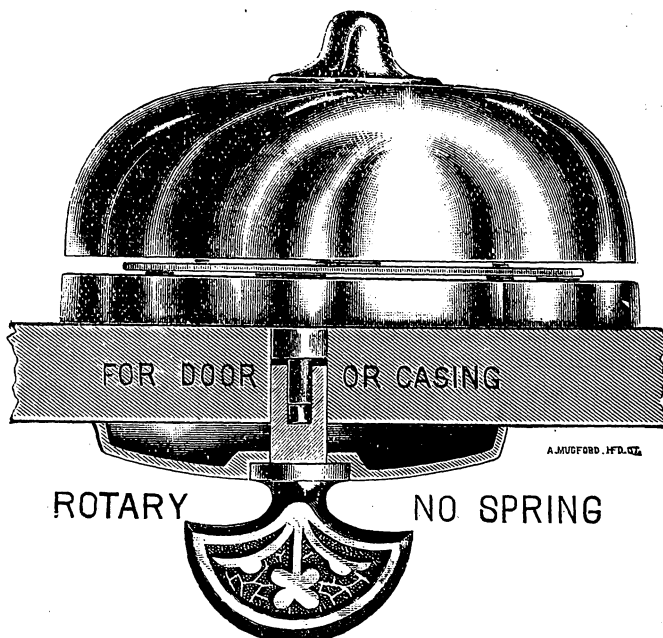
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3 Inch.

No. 91, Nickel Plated.

No. 92, Bronze Plated.

Per Doz., \$17.50.



3 1/2 Inch.

No. 101, Nickel Plated.

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Per Doz., \$20.00.

Simply turning the knob about **one-fourth** in either direction produces about **ten clear, full tones**, which though not startling or annoying, can be better heard all through the house than any bell ever made to imitate Electrical Results.

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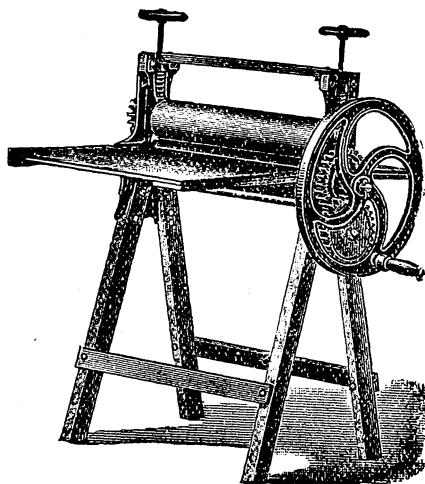
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Better Work than Hand-Work

SAVES all the fuel,
two-thirds the work.
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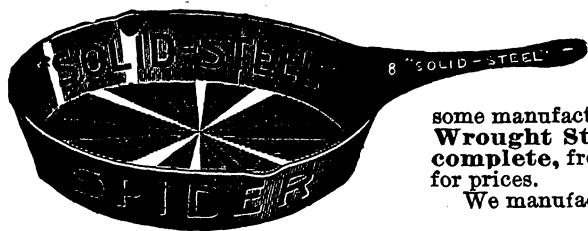


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Manufactured by

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Notwithstanding the claims made by some manufacturers' agents our spiders are made from **Wrought Steel, Without Seams or Rivets, complete, from a single piece of metal.** Write for prices.

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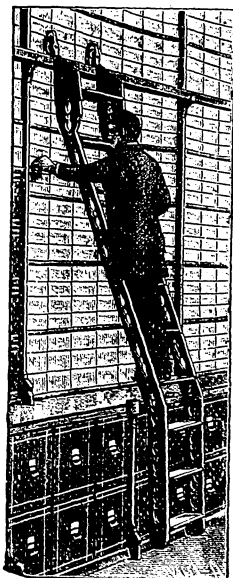
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We do Light and Heavy Stamping and Blanking. Also build Dies and Stamping Machinery.

An Investment

- ✱ That soon pays for itself, and a fixture you will wonder
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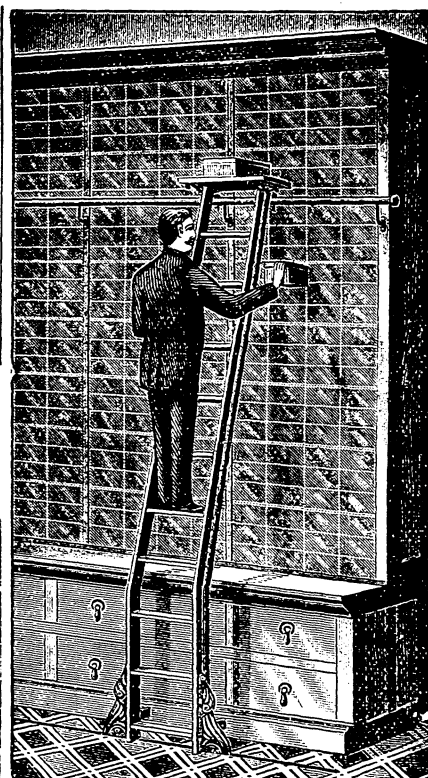


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A postal card will get our Catalogue.

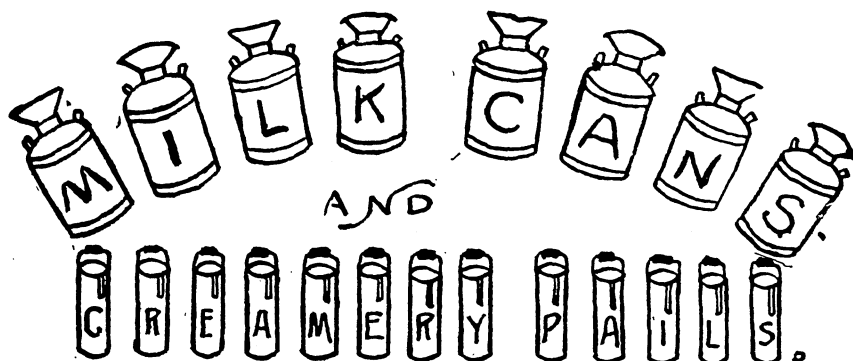
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No other Ladder Service can approach the "Bicycle" in ease and convenience of operation. Compared with others they work like a bicycle beside a lumber wagon.
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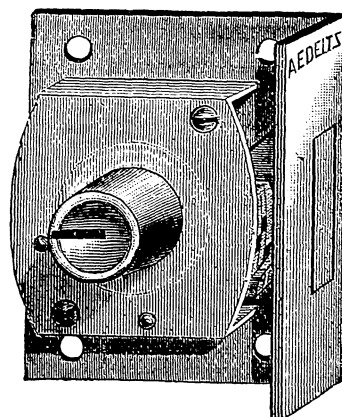
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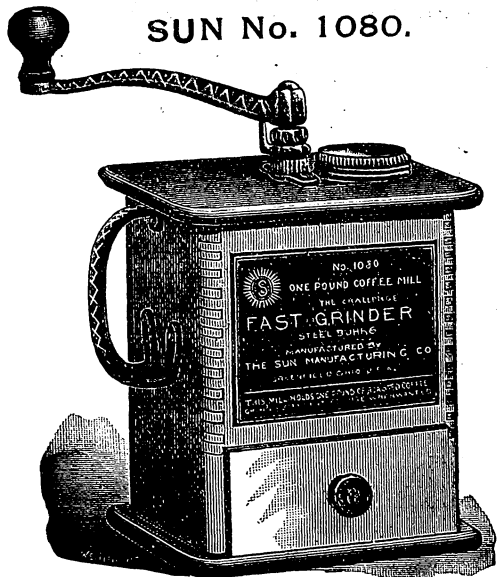
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Factory,

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Holds 1 lb. of Roasted Coffee, which may be ground as needed.

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Are a High Grade Coffee Mill at Popular Prices. We guarantee them Rapid Grinders, and to stand constant use for years. They are mills the seller can warrant with full confidence.

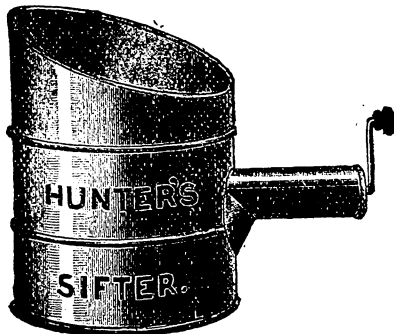
Do not be confused with the imitation of our goods from a
PATCHED UP, SECOND-HAND JOB LOT STOCK.

We cannot afford to sacrifice the confidence of the trade and our own reputation that way. We are manufacturers of all the goods we sell and stake our reputation on their merits.

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MANUFACTURERS OF

Cash Registers, Money Drawers, Coffee Mills and Wooden Ware Specialties.

They're All the Best (?)

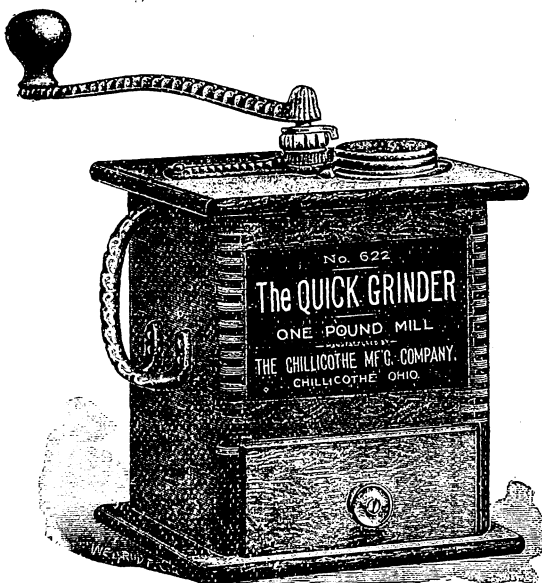


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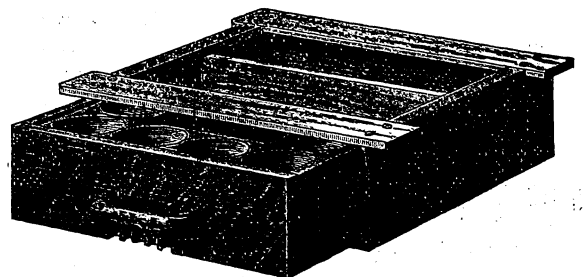
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Our Cheapest Mills are those with "Steel Alloy Buhrs." We are now sole manufacturers of the "Quick Grinder" Coffee Mills, formerly made by The Chillicothe Mfg. Co., and own all patterns of that Co. When you are in the market for Coffee Mills and Money Drawers, *don't forget your Annie Darling*, and write us the letter, Bud.



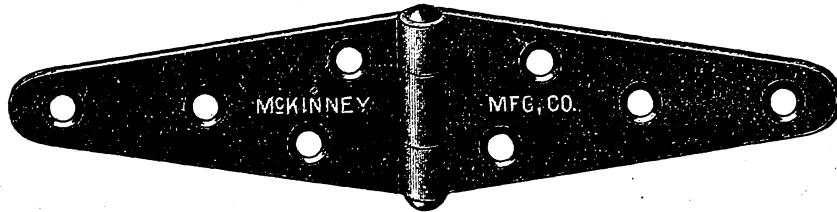
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STEEL HINGES AND BUTTS.

STANDARD GOODS.

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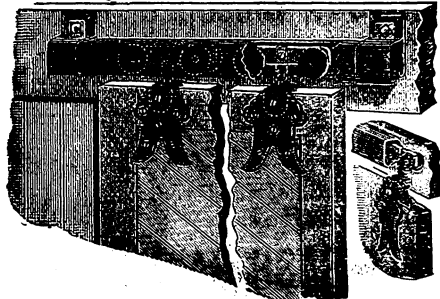
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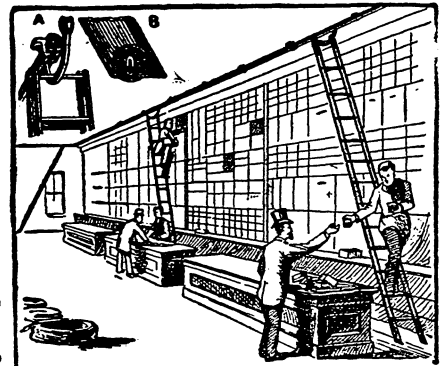
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Hangers.

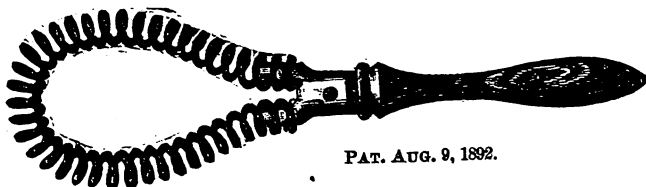
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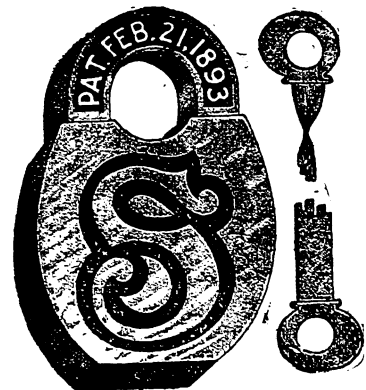
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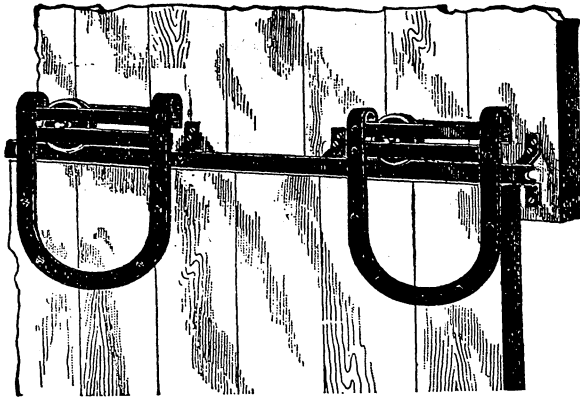


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The first Anti-friction Steel Door Hanger placed upon the market and to-day stands as the original and best. Sold in all the States of the Union, as well as abroad. Also Lane's Noiseless Steel Parlor Door Hanger, using Single Steel Track, a great success.

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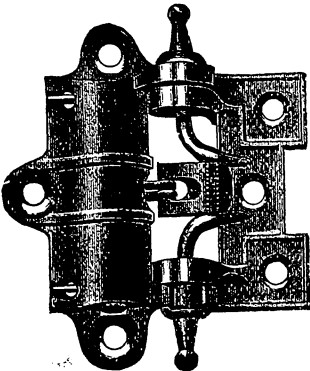
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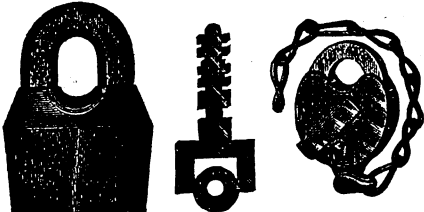
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A covered (patented) hold-back Spring Hinge. Full particulars, free Sample and Prices by mentioning this paper.

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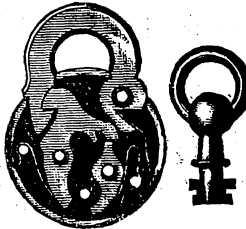
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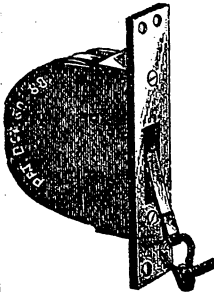
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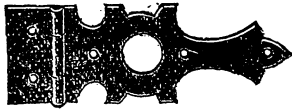
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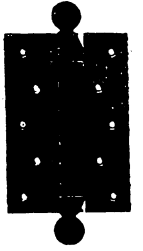
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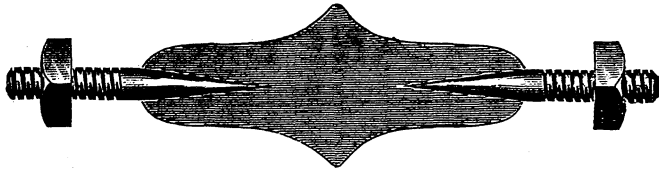
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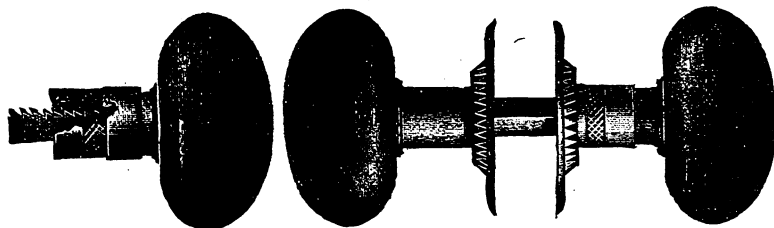
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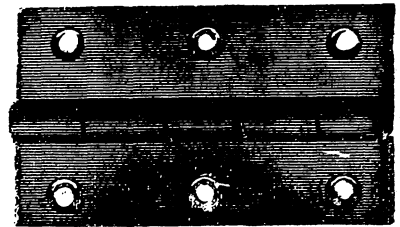
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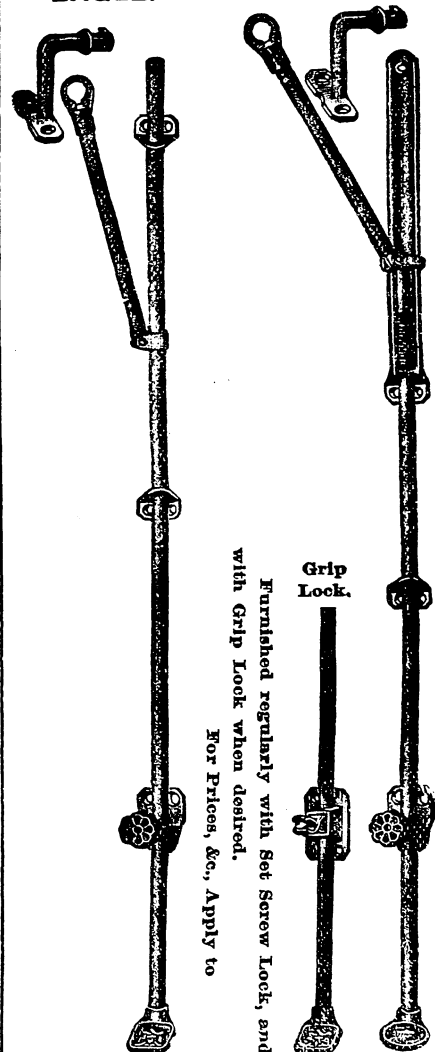
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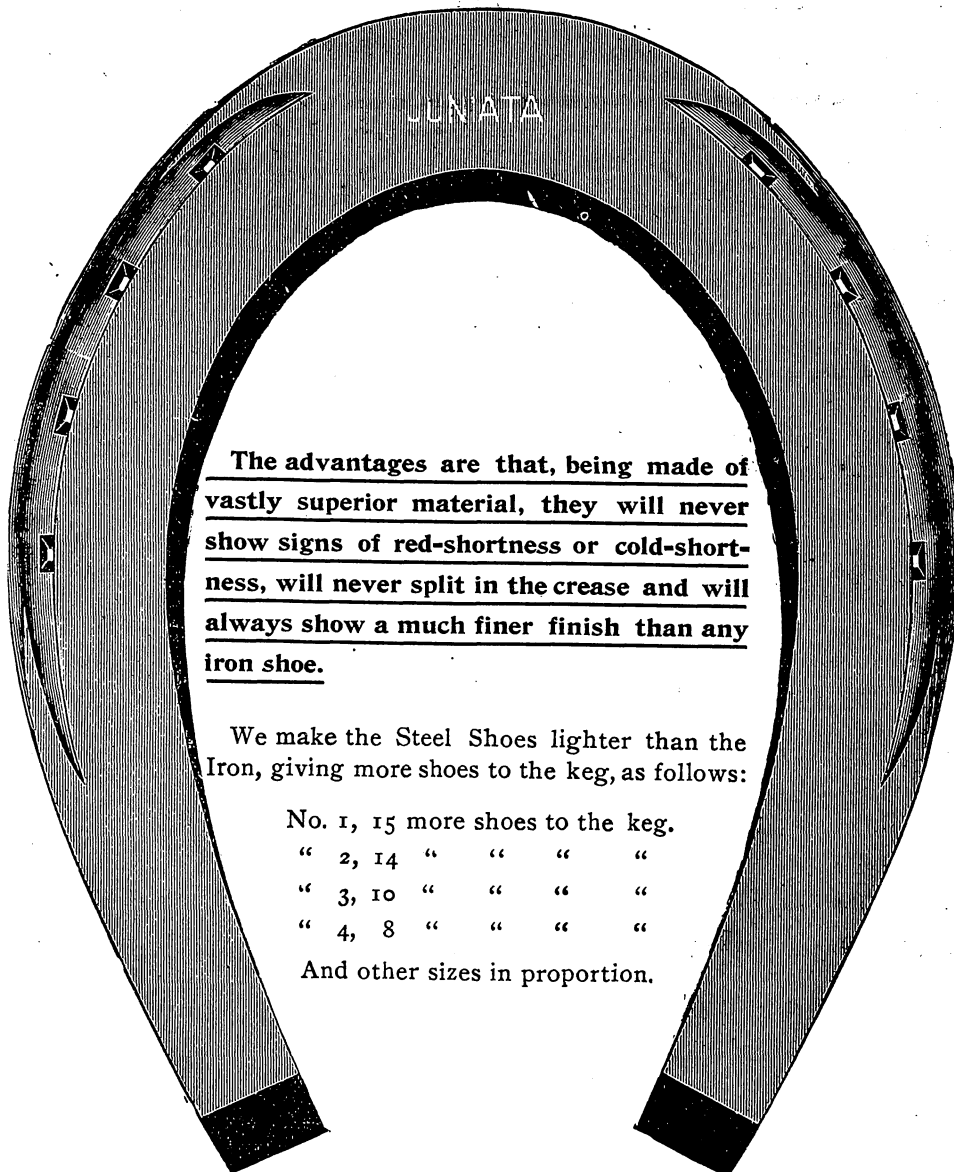
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And other sizes in proportion.

No. 2 EXTRA SWAGED FRONT.

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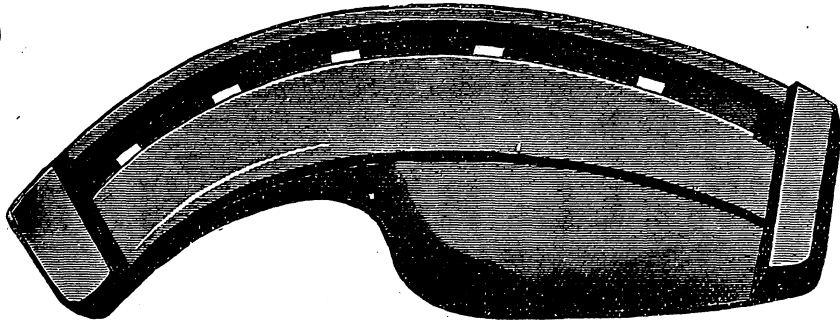
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Needs No Clinching.



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It allows the use of very small nails."
There is nothing beyond "supreme excellence," nor is there anything comprised in a horse nail, except the "material from which it is made," "the method of manufacture," and "quality of finished product."
Putnam nails, by their "elasticity," give slightly to the expansion and contraction of the hoof while the horse is in motion; by their "smoothness," do not enlarge the nail holes in the hoof, while their "supreme excellence," in "holding power in the clinch," enables them to hold the shoe in the hardest service until worn out.
By the "use of small nails," large holes are avoided and money saved to the smith.
Thus it will be seen that the officials of the *World's Columbian Exposition* recognize what qualities go to make up a good horse nail and that only the "Putnam" contains them all.

PUTNAM NAIL CO.,
Neponset, Boston, Mass.

H. D. SMITH & CO.,

Plantsville, Conn.,

MANUFACTURERS OF THE BEST QUALITY

CARRIAGE MAKERS' HARDWARE,

MANUFACTURE THE LARGEST VARIETY OF

FORGED CARRIAGE IRONS

Of Best Material and Workmanship.

Send for Price and Illustrated List of

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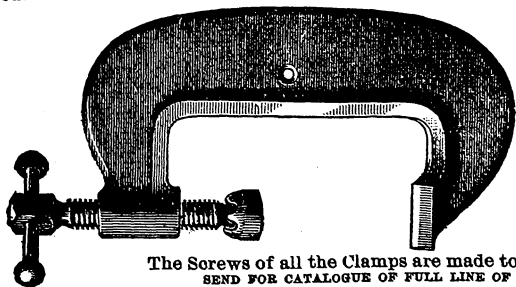
Manufactured by the NATIONAL HORSE NAIL CO.,
VERGENNES, VERMONT.

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LE COUNT'S HEAVY STEEL CLAMP.

Extra heavy, with Button on end of screw, hung on a ball so as to accommodate itself to irregularities with out bending the screw. The foot of the Clamp is planed.



No.	opening to 2 inch.	price
1	2	\$1 75
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3	4	2 25
4	5	2 50
5	6	2 75
6	8	3 25
7	10	3 75
8	12	4 25
9	14	5 00
10	16	6 00
11	18	7 00

Full Set, 11 sizes, \$40.50.

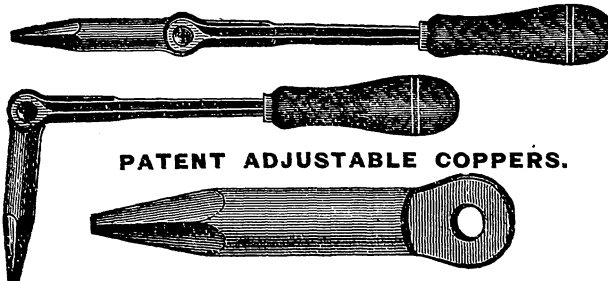
Ship or Bridge Clamp with Large Screws.
No. 12 opens 24 inches.....price, \$12 00
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The Screws of all the Clamps are made to reach the lower number.
SEND FOR CATALOGUE OF FULL LINE OF MACHINISTS' TOOLS.

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These goods are for sale by CHAS. CHURCHILL & CO., Ltd., 21 Cross St., London, England.

Covert Pat. Adjustable Soldering Irons and Coppers

It is a complete tool in every respect, and can be as easily adjusted at angle while hot as cold. The handle can be used indefinitely, as when the copper is worn out it can be replaced in the same handle, making the iron as good as new at about half the cost of the ordinary soldering iron.



PATENT ADJUSTABLE COPPERS.

A sample of $\frac{3}{4}$ in. soldering iron will be sent by mail, free of postage to any address, on receipt of sixty cents (60c.).

FOR SALE BY ALL GENERAL HARDWARE AND PLUMBERS' SUPPLY HOUSES.

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P. F. BURKE, O. F. DEWICK & CO.
Manufacturers of
PATENT STEEL
(Blunt and Sharp)
TOE-CALKS.
—ALSO—
BURKE'S IMPROVED
HORSESHOERS'
FOOT VICE.
Send for Circulars.
360 Dorchester Av. Die for Welding
BOSTON, MASS. Sharp Calks.

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Horse and Mule Shoes,
BAR IRON.

CRESCENT HORSE SHOE
IRON CO.

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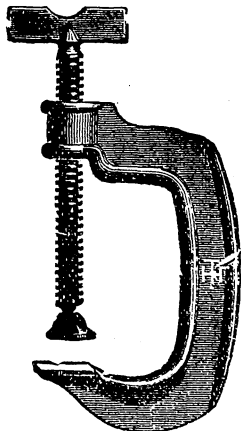
FROST'S ANTI-RATTLER
Pat. Jan. 20, 1880.
Cut One-half Size.
Sample pair sent to any hardware or saddlery firm by addressing
The Frost Thill Spring Co.,
Boston, Mass.

P. J. Conroy & Co.,
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"CONROY"
Refrigerator Door
Fasteners
Have rapidly supplanted all others.
Refrigerator Trimmings.
Pat. Dec. 15, '85

BUFFALO SCALE CO., Buffalo, N. Y. SCALES OF ALL KINDS.

Patented Articles of MALLEABLE IRON.

NEW pattern Heavy Screw Clamps
Strongest in the market.



HAMMER'S MALLEABLE IRON OILERS, 3 Sizes.

HAMMER'S MALL. IRON HAND LAMPS.

HAMMER'S M. I. HANGING LAMPS.

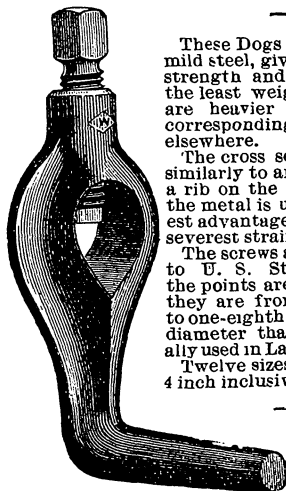
HAMMER'S ADJUSTABLE CLAMPS.

For sale by all the principal Hardware Dealers.
Send for Price List.

MALLEABLE IRON CASTINGS
of superior quality, and Hardware Specialties in
Malleable Iron made to order.

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DROP-FORGED STEEL LATHE DOGS.



These Dogs are forged from mild steel, giving the greatest strength and toughness for the least weight, while they are heavier than Dogs of corresponding sizes made elsewhere.

The cross section is shaped similarly to an ogee, forming a rib on the back, by which the metal is utilized to greatest advantage at the point of severest strain.

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Twelve sizes, from $\frac{3}{8}$ inch to 4 inch inclusive.

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STANDARD AND SPECIAL DROP-FORGINGS

—MAKERS OF—

Brock's Patent Chain Pipe Wrench,

9 to 15 Richards St., near Hamilton Ferry

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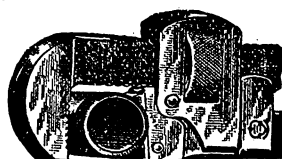


Improved Adjustable S-Wrench.
Case-Hardened Throughout. Parts Interchangeable.

For Circulars and Price-List, address

BEMIS & CALL HARDWARE & TOOL CO.,

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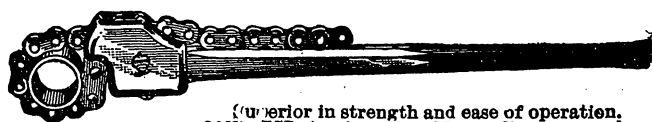
TRIMO PIPE WRENCH,

Forged Steel.

All parts Interchangeable.

Grips firmly without loss of motion. Releases readily. Never locks. Causes no trouble in close quarters. Does not crush the pipe.

**TRIMO
CHAIN
PIPE
WRENCH.**



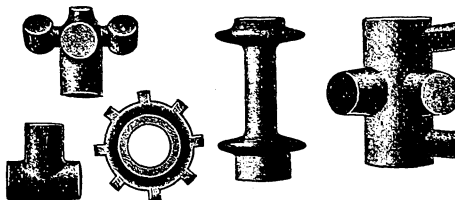
Superior in strength and ease of operation.
COMPLETE circular grip. Never slips nor crushes.

Can be used with one hand and in closer quarters than any other Basin Wrench. Parts Interchangeable.



**TRIMO
BASIN WRENCH.**

TRIMONT MFG. CO., ROXBURY
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WYMAN & GORDON
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DROP FORGINGS

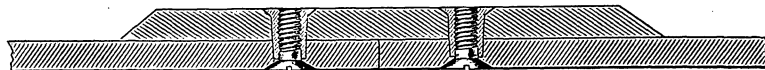
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Three Sizes,
 $\frac{1}{4}$, $\frac{3}{8}$, $\frac{1}{2}$ inch.

The Best Tool of its
Kind in the Market

READY TO APPLY.



SECTION OF BELT SHOWING FASTENERS IN PLACE
THE BILLINGS & SPENCER CO., HARTFORD, CONN.

Drop Forgings of Every Description

HARDWARE DEALERS

CAN RECOMMEND THE

CHAMPION METAL WINDOW SASH CHAINS

to their customers as a reliable substitute for Sash Cords, very strong and lasting (some in daily use ten years), and gives thorough satisfaction wherever used. The patented attachments are very simple and can be applied to any window.

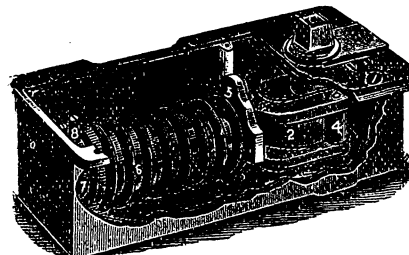
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Write for Prices.

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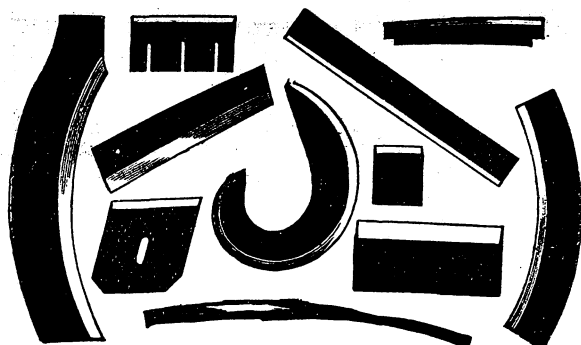
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For Double or Single Acting Doors.

Applied in floor under door. They close the door gently, without noise or violence, and stop it at once at the center. Doors cannot sag, springs do not break or set. Send for new price-list.

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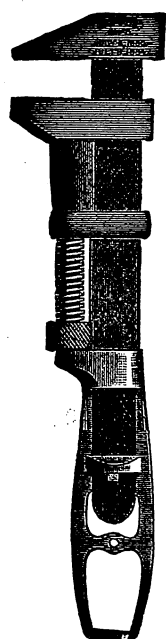
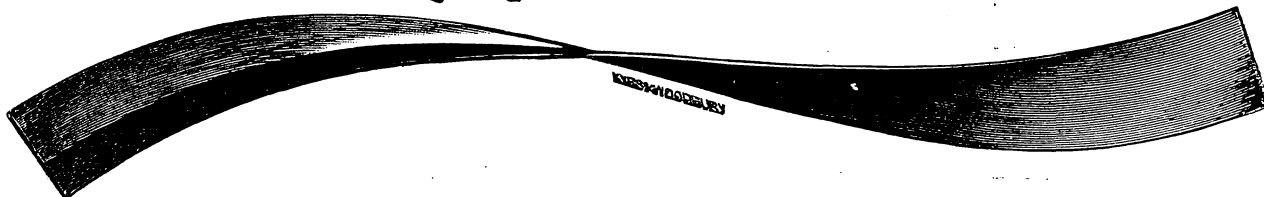
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Manufacturers of **MACHINE KNIVES.**

Shear Blades and Strips, Moulding Cutter Plate, Die Stock for Leather, Cloth and Paper Cutting Dies. Lawn Mower and Hay Cutter Knives of every description.

End view of Plated Stock for Dies, Lawn Mower Knives, Blades Etc., showing how the Steel is laid.



L. COES'

Genuine Improved
KNIFE HANDLE
PATENT

Screw Wrenches

MANUFACTURED BY
COES WRENCH CO.,
WORCESTER, MASS.

Established in
1889.
Registered
March 31, 1874.

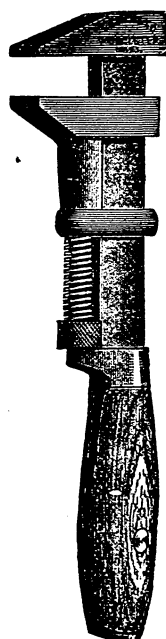
Patented July
6, 1880.
Patented July
8, 1884.

Sectional View Illustrates our New Knife Handle, showing Malleable Iron Frame and Shank of Bar keyed into position.

✓ Straight Bar, Extra Long Nut for Screw in Jaw. ✓

The **BEST MADE** and **STRONGEST WRENCH** in the MARKET.

J. C. McCARTY & CO.,
JOHN H. GRAHAM & CO., } New York Agents.



• **IMPROVED MINE LAMP** •
FOR ANTHRACITE AND
BITUMINOUS
MINING
6
DIFFERENT
STYLES
OF SPOUTS.
SAMPLE 15¢.

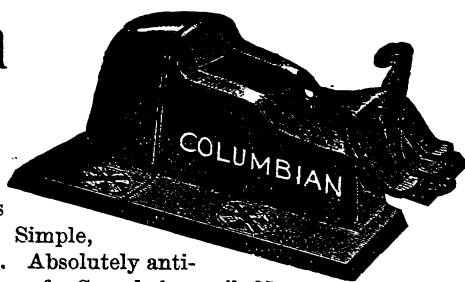
SEAMLESS
BRASS
COLLAR
BRASS HINGE
Lid Solid
NO SOLDERING

B. E. LEONARD, Scranton, Pa.

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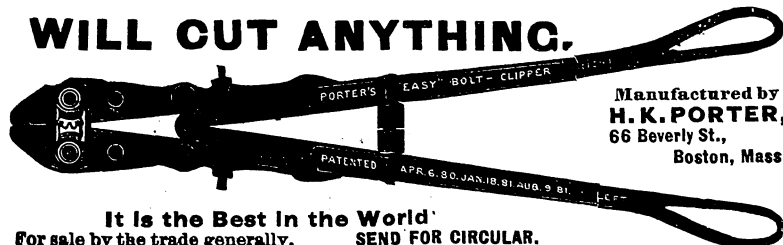
Locks three ways
with one motion. Simple,
strong and durable. Absolutely anti-
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Lock.

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THE "EASY" BOLT CLIPPER. WILL CUT ANYTHING.



It is the Best in the World.
For sale by the trade generally. SEND FOR CIRCULAR.

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23,000 Sold.

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Made in Hay,
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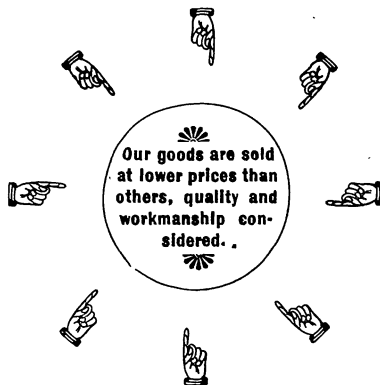
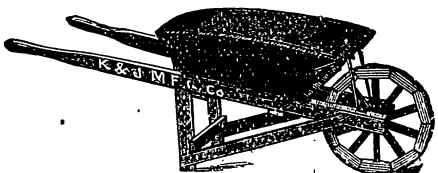
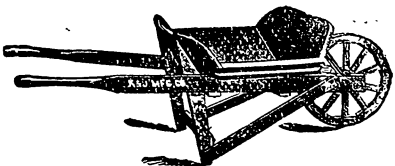
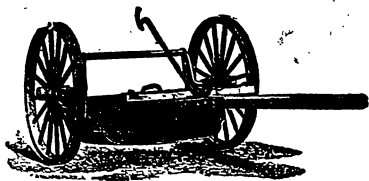
Heavy and long
Steel Socket.

Most elegant
goods ever
made.

The Iowa
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Sole Makers,
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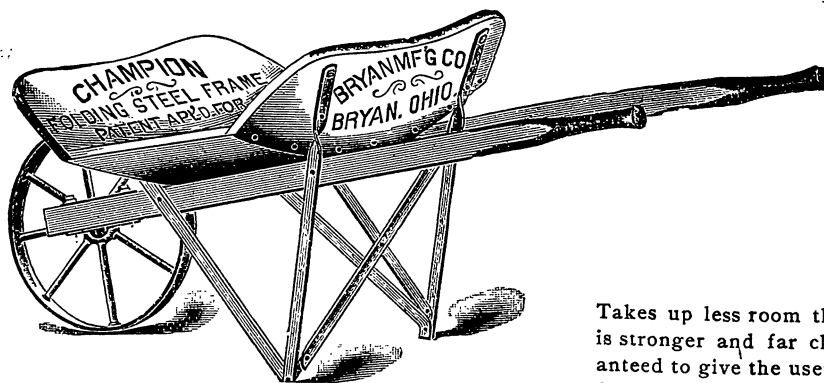




The Kilbourne & Jacobs M'f'g Co.
Columbus, O., U. S. A.
Catalogue free.



Champion



**Folding
Steel
Frame
Barrow.**

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BRYAN MFG. CO.,
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Takes up less room than any other,
is stronger and far cheaper. Guar-
anteed to give the user perfect satis-
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points; but many good ones that have
been long sought for.

ALL STEEL WHEELBARROWS & SCRAPERS

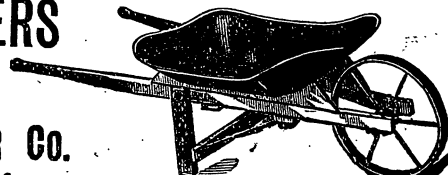


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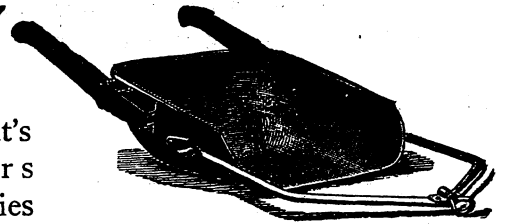
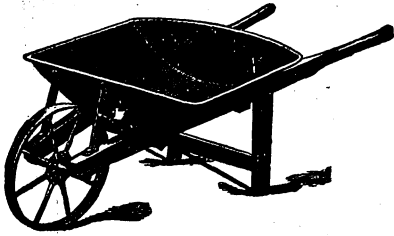
AMERICAN STEEL SCRAPER CO.

104 Court Street, SIDNEY, O.



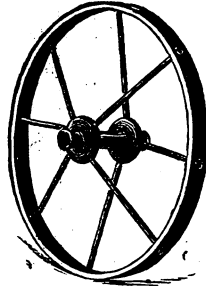
IT'S ECONOMY

To buy where you can get the best and cheapest If it's Wheelbarrows or Scrapers you're looking for, this applies particularly to you. Write for net quotations.



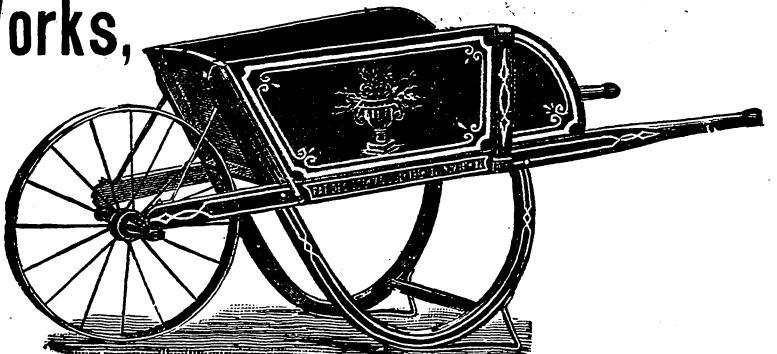
Sidney Steel Scraper Co., 924 Poplar Street, SIDNEY, OHIO.

Toledo Wheelbarrow Works, TOLEDO, OHIO.



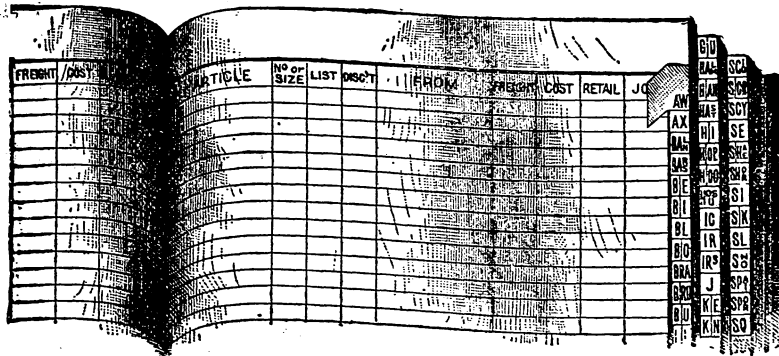
We call the trade's attention to the construction of our new steel wheel. We use a $\frac{3}{8}$ round spoke which is cast in hub and passes through tire in wedge shape as shown in sectional cut. In this mode we get twice the strength of the spoke, as in dumping the spoke can't push through or pull out. This sectional view explains the principle fully.

G. W. THOMAS & CO.



The Iron Age Hardware Price Book E.

SECOND EDITION, REVISED AND ENLARGED, WITH MULTIPLE INDEX (Patent Pending).



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AU HAN SCY
AW HA^T SE
AX HI SH^E
BA^N HO^L SH^R
BA^S HOO SI
BE HQ^S SK

Fac-Simile of Indexing.

SIZE.—The book is 7 x 10 inches (much larger than Price Books A, B, C, or D), 350 pages.

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SUPPLEMENT.—A 40-page Supplement is provided to give room for supplemental quotations, memoranda, tables, &c.

THIS BOOK IS ISSUED IN ONLY ONE EDITION, PRICE, \$5.00.

Advantages of Multiple Index Price Book.

A SPECIAL feature of the books is the arrangement of the index characters, which, instead of being alphabetical, are arranged with special reference to the classification of Hardware goods, each index character giving the first two or three letters of the names of Hardware articles as shown above. The ease and convenience with which the books can be used is indicated in the following examples, taken from Book F:

For Augers,	turn to	AU	For Chisels,	turn to	CH ¹	For Iron,	turn to	IRO
" Parers, Apple	"	PA ^R	" Cutlery,	"	CUT	" Irons,	"	IR ^S
" Saws,	"	SAW	" Cartridges,	"	CAR	" Shovels,	"	SH ^R
" Pumps,	"	PUN	" Rules,	"	RUL	" Grindstones,	"	GRI
" Bits,	"	BIT	" Locks,	"	LO	" Stones,	"	STO

Special care has been taken to make the classification as indicated in the index correct and comprehensive, making provision for all Hardware articles and giving sufficient space for the keeping and recording of prices. It is thought that every strictly Hardware article has its first two or three letters given, thus permitting immediate reference to it by a single motion.

It is, however, obvious if any articles are not directly designated by the index characters, that the index, being alphabetical in its arrangement, indicates the place where quotations on such articles should be recorded. The supplement, however, may be found useful for quotations on any outside goods which the Hardwareman may desire to keep prices on, while at the same time it may be used if necessary for any overflow of matter from the preceding pages, or to contain list prices or other matter relating to goods.

Hardware Classification.—A pamphlet containing a classification of the leading Hardware articles is furnished with the price books.

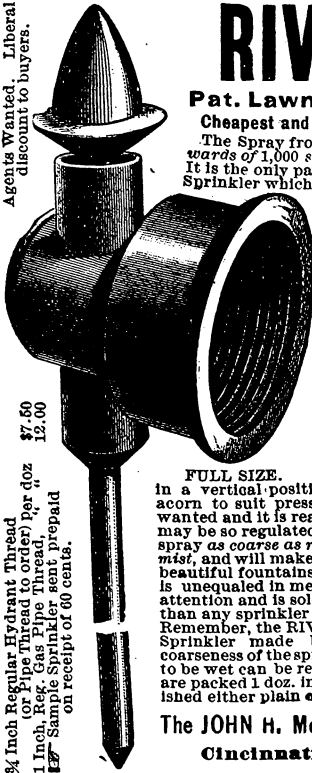
Standard Lists.—In connection with these price books a set of *The Iron Age* STANDARD HARDWARE LISTS can be used with great advantage. Price 25 cents.

These price books, which have been prepared by R. R. Williams, Hardware Editor of *The Iron Age*, are presented to the attention of Hardware men in the confidence that they will be found a most valuable aid in keeping track of prices.

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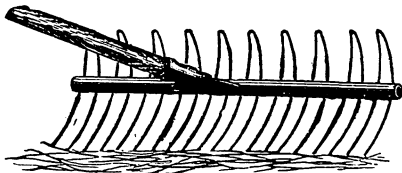
RIVAL

Pat. Lawn Sprinkler.
Cheapest and Best in Use.

The Spray from it covers upwards of 1,000 sq. feet of lawn. It is the only patent adjustable Sprinkler which is adaptable to any water pressure. Being made of brass, and having no revolving parts to wear out, or small openings to clog up, it can be operated with sandy or muddy water as well as clear, and will last for years. To operate, screw Sprinkler on end of hose, stick thered in to the ground in a vertical position, adjust the acorn to suit pressure and spray wanted and it is ready for use. It may be so regulated as to throw a spray as coarse as rain or as fine as mist, and will make one of the most beautiful fountains imaginable. It is unequalled in merit, requires no attention and is sold at a less price than any sprinkler in the market. Remember, the RIVAL is the only Sprinkler made by which the coarseness of the spray and the area to be wet can be regulated. They are packed 1 doz. in a box, and finished either plain or nickel plated.

The JOHN H. MCGOWAN CO.
Cincinnati, Ohio.

3/4 Inch Regular Hydrant Thread (or Pipe Thread to order) per doz \$7.50
1 Inch, Reg. Gas Pipe Thread, " 12.00
2" Sample Sprinkler sent prepaid on receipt of 60 cents.



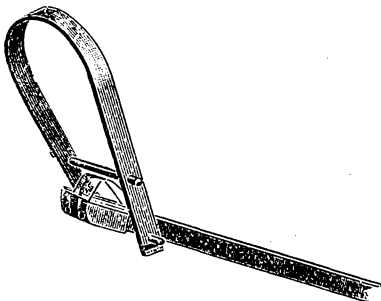
Lead and Others Follow.

We manufacture the ORIGINALS; others follow! But to lead in prices and quality is the success of our Post-hole Diggers, Reversible Lawn-rakes, Spring Curry-combs, Saw-sets, etc.

F. E. KOHLER & CO.,
CANTON, OHIO.

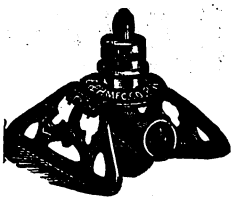
Improved American.

PATENT PENDING.



THE BISHOP POKES are the best, as they are made from good material, are very strong, and have all the latest improvements up to date. Shun other pokes said to be just as good, for they are not. For names of Bishop Pokes we refer to price-list in *Iron Age*. They are for sale by nearly every jobber of hardware in the U. S.

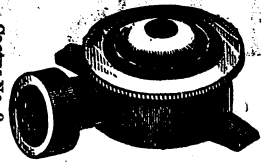
A. W. BISHOP.
MAKER,
BEREA, - - - OHIO.



Japanese No. 12,
Adjust.

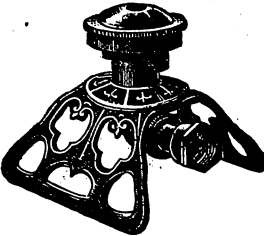
LAWN SPRINKLERS.

We manufacture the BEST and CHEAPEST Lawn Sprinklers in the World.



Cactus No. 9.

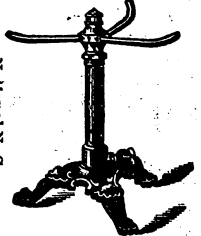
The only Sprinklers which have no revolving parts to leak or wear out. The only Sprinklers free from small holes, and which cannot become clogged with gritty substances. The only Sprinklers which are adjustable and will give a spray as fine as the mist of Niagara, or as heavy as the area of the supply pipe. The best Sprinklers for high pressures, and the only sprinklers which will give satisfaction with low pressures. We also manufacture the old style revolving sprinklers, but for our own use would not have them.



Ette & Henger Mfg. Co.

ST. LOUIS, MO.

SEND FOR DESCRIPTIVE CIRCULARS.



National N. G.

THE TEST OF 2 SEASONS

PROVES THE SUCCESS OF THE

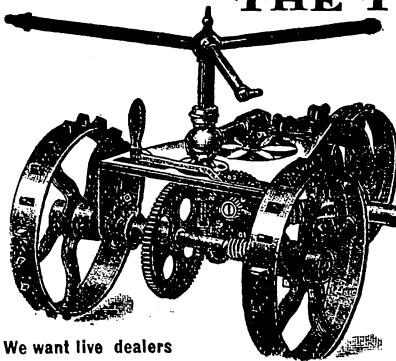
LITTLE GIANT

Traveling Lawn Sprinkler.

PATENTED.

Can be set to travel anywhere from 15 to 500 feet per hour, either on a straight line or in a circle, and can be gauged to throw water over a swath 5 to 50 ft. in width. Highest Award at World's Columbian Exhibition.

SEND FOR CIRCULAR.



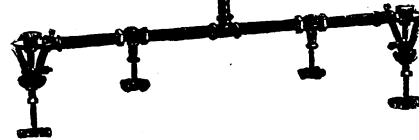
We want live dealers to handle them.

Portland Lawn Sprinkler Co.,
PORTLAND, ME.

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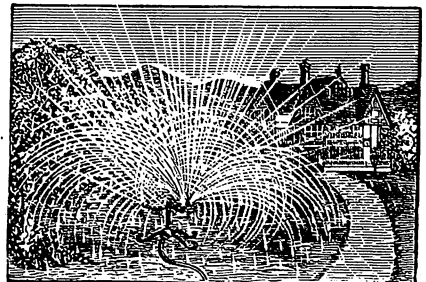


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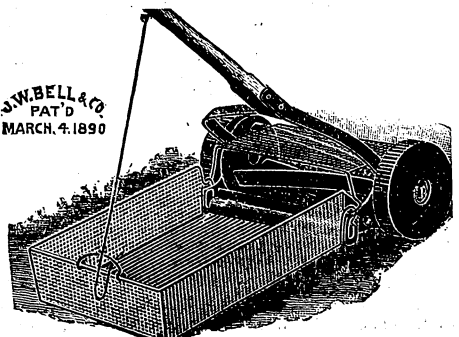
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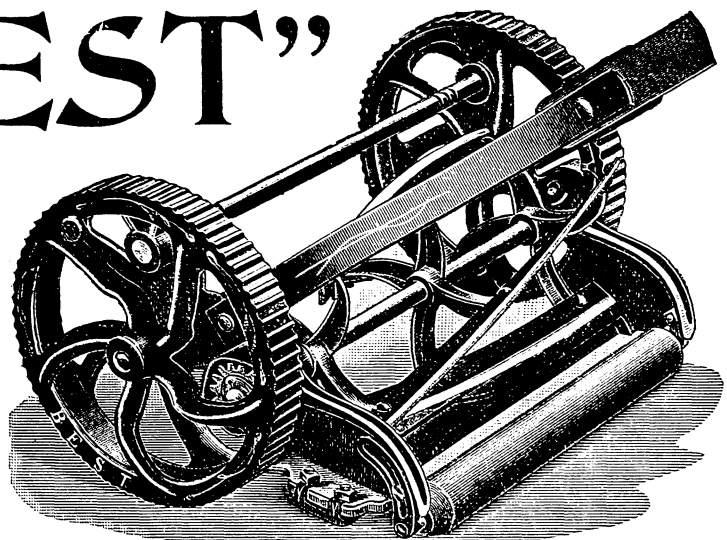
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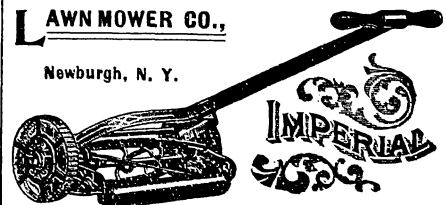
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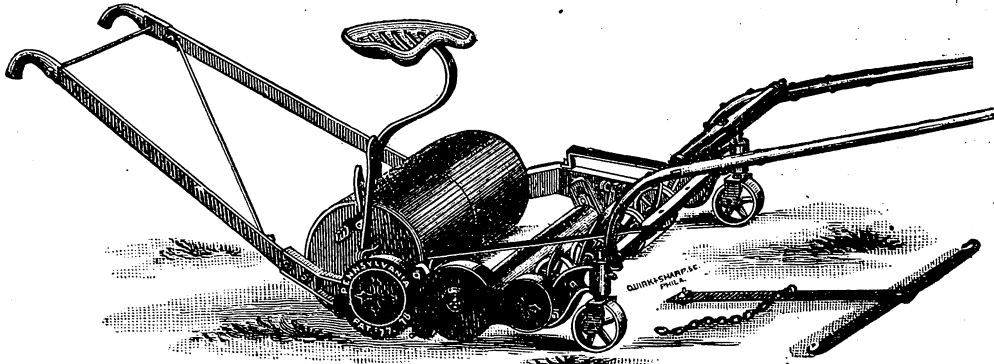
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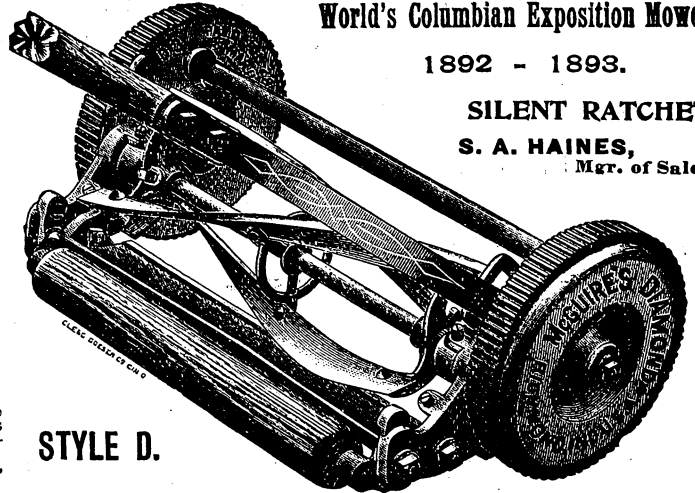
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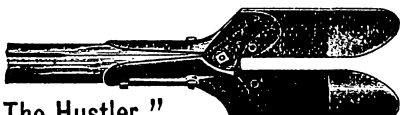
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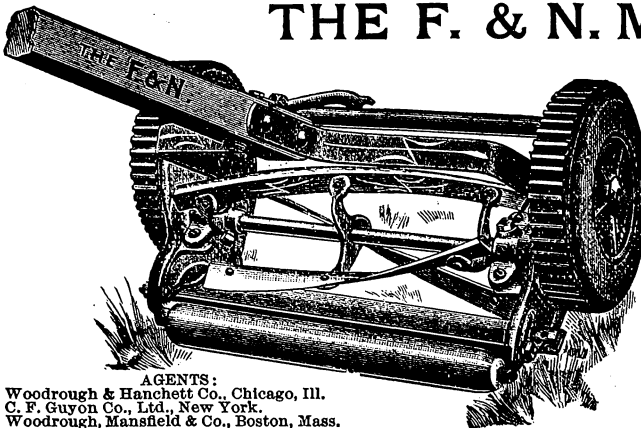


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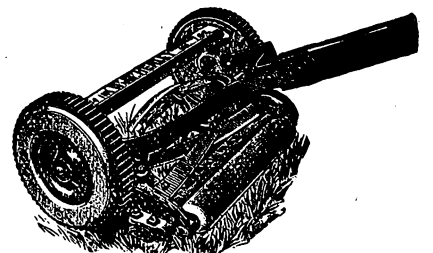
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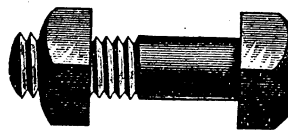
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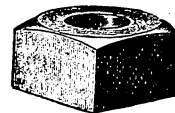
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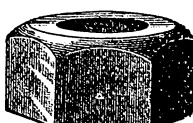
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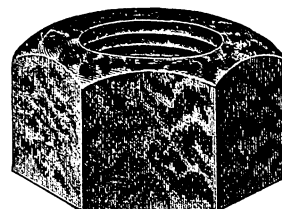
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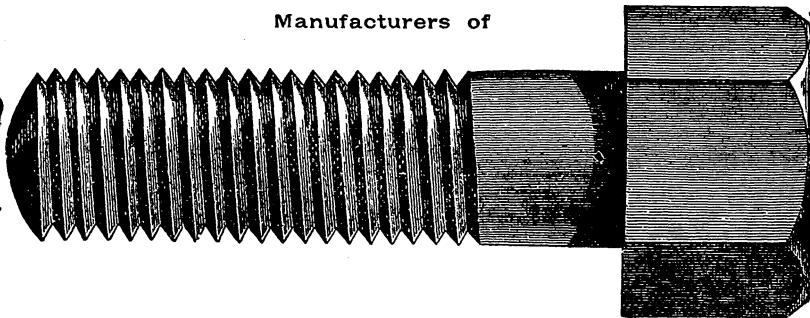
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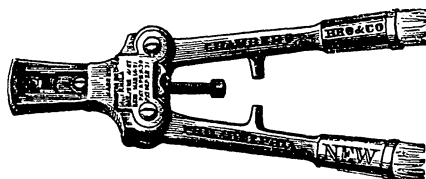


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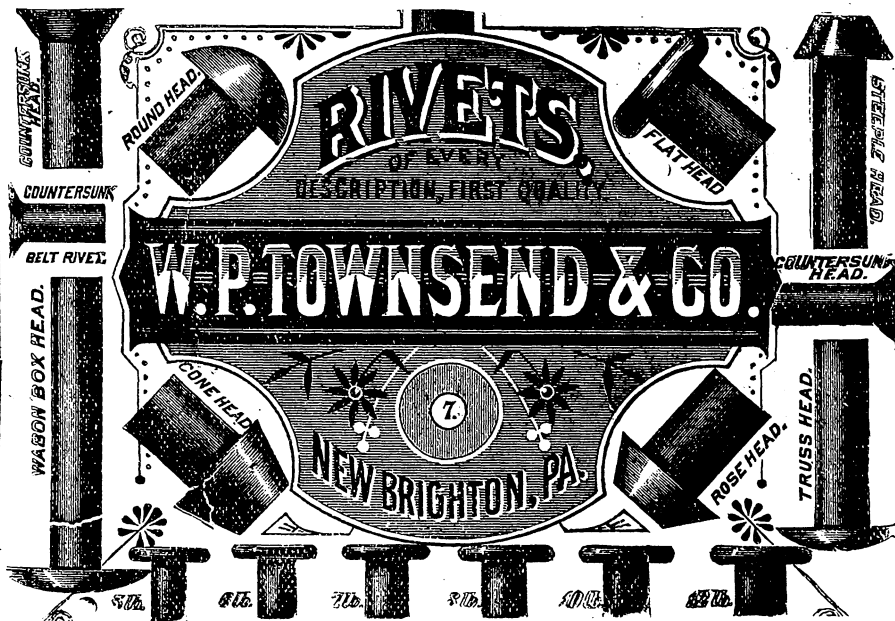
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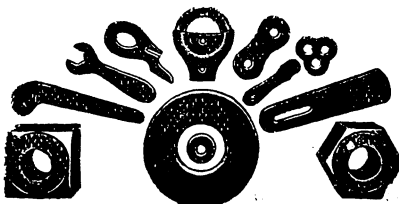


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Hoggson & Pettis Mfg. Co., New Haven, Conn.
Skinner Chuck Co., New Britain, Conn.

Union Mfg. Co., Bridgeport, Conn.
Union Mfg. Co., 103 Chambers, N. Y.
Whitlock, Wm., 39 Cortlandt St., N. Y.
Whitton, D. E. Mach. Co., New London, Conn.

Clamps.

Hammer & Co., Branford, Conn.

Le Count, C. W., So. Norwalk, Conn.

Coal.

Barns, C. K. & Co., Philadelphia, Pa.
Wister, Francis, Philadelphia, Pa.

Coffee Mills.

Waddell Wooden Ware Works, Greenfield, Ohio.
Sun Mfg. Co., Greenfield, Ohio.

Coke.

Barns, C. K. & Co., Philadelphia, Pa.
Houston, C. B. & Co., Philadelphia, Pa.
Rainey, W. J., Cleveland, O.
Wister, Francis, Philadelphia, Pa.

Collections.

Hardware Board of Trade (Limited), 4 and 6 Warren, N. Y.

Condensers.

Worthington, Henry R., 86 & 88 Liberty Street, N. Y.

Conveying Machinery.

Brown Hoisting & Conveying Machine Co., Cleveland, Ohio.
Jeffrey Mfg. Co., Columbus, O.
Link-Belt Engineering Co., Phila., Pa.

Copper.

Ames Sword Co., Chicopee, Mass.
Ansonia Brass & Copper Co., 19 and 21 Cliff, N. Y.
Hendricks Bros., 49 Cliff, N. Y.
New Haven Copper Co., 294 Pearl, N. Y.
Rainey, W. J., Cleveland, O.
Rome Brass & Copper Co., Rome, N. Y.
Wister, Francis, Philadelphia, Pa.

Cordage.

Samson Cordage Works, Boston, Mass.

Cork Screws.

Williamson, C. T. Wire Novelty Co., Newark, N. J.

Corrugated Furnaces.

Continental Iron Wks., Brooklyn, N. Y.

Corrugated Iron.

Cincinnati Corrugating Co., Piqua, O.
Cambridge Roofing Co., Cambridge.
Jersey City Galvanizing Co., 112 John St., N. Y.

Moseley Iron Bridge & Roof Co., 5 Dey, N. Y.

N. Y. Iron Roofing & Corrugating Co., Jersey City, N. J.

Counting Machines.

Durant, W. N., Milwaukee, Wis.

Cranes.

Detroit Foundry Equipment Co., Detroit, Mich.
Halsey, W. S. & Co., Birdsboro, Pa.
Maris & Beekley, Philadelphia, Pa.
Ridgway, Craig & Sons, Coatesville, Pa.

Sellers, Wm. & Co., Inc., Phila., Pa.

Yale & Towne Mfg. Co., Stamford, Conn.

Cupolas, Hot Blast.

Detroit Foundry Equipment Co., Detroit, Mich.

Curry Combs.

Gibbs Mfg. Co., Canton, O.

Cutlery Cases.

Torrey, J. R. & Co., Worcester, Mass.

Cutlery Enamel.

Snipley, A. B. & son, Phila., Pa.

Cutlery, Importers of.

Sickles, Sweet & Lyon, 35 Barclay, N. Y.

Cutlery, Manufacturers of.

Bingham, W. Co., Cleveland, Ohio.
Dame, Stoddard & Kendall, Boston, Mass.
Goodell Co., Antrim, N. H.
Northampton Cutlery Co., Northampton, Mass.

Wilson, John, Sheffield, England.

Cutlery Display Cases.

Union Show Case Co., Chicago, Ill.

Cyclometers.

Bridgeport Gun Implement Co., 313-315 Broadway, N. Y.

Dies.

Wilson, J. Fred, Worcester, Mass.

Die Forgings and Castings.

Bliss, E. W. Co., Brooklyn, N. Y.

Deg Collars.

Union Hardware Co., Torrington, Ct.

Door Bells.

Graham, Jno. H. & Co., 113 Chambers St., N. Y.

Door Checks and Springs.

Bardsley, J., 149 & 151 Baxter St., N. Y.

Door Knobs.

Perry & Whipple Co., New Haven, Ct.

Drilling Machines.

Bickford Drill & Tool Co., Cin., Ohio.
Buffalo Forge Co., Buffalo, N. Y.
Champion Blower & Forge Co., Lancaster, Pa.

Colburn, A. M., New Haven, Conn.

Dallett, Thos. H. & Co., Philadelphia.

Dietz, Schumacher & Co., Cincinnati, Ohio.

Dwight Slate Machine Co., Hartford, Conn.

Goddard, Asa, Worcester, Mass.

Halsey, Jas. T., Philadelphia, Pa.

Egg Beaters.

North Bros. Mfg. Co., Philadelphia, Pa.

Electric Bells and Supplies.

Ostrander, W. R. & Co., 204 Fulton St., New York.
Wollensak, J. F., Chicago, Ill.

Electric Dynamo Machines.

Hanson & Van Winkle Co., Newark, N. J.

Elevators, Makers of.

Link-Belt Engineering Co., Phila., Pa.
Morse, Williams & Co., Phila., Pa.
Penna. Elevator Engineering Co., Phila., Pa.
Warner Elevator Mfg. Co., Cincinnati, Ohio.

Emery and Emery Wheels.

N. Y. Belting & Packing Co., Ltd., N. Y.
Northampton Emery Wheel Co., Leeds, Mass.
Norton Emery Wheel Co., Worcester, Mass.
Sterling Emery Wheel Co., 174 Fulton St., N. Y.
Sturtevant Mill Co., Boston, Mass.

Emery Wheel Dressers.

Bay State Stamping Co., Worcester, Mass.

Engineers and Contractors.

Aiken, Henry, Pittsburgh, Pa.
Artificial Gas Engineering Co., Pittsburgh, Pa.
Herrick, J. A., 284 Pearl St., N. Y.
Kennedy, Julian, Pittsburgh, Pa.
Laughlin, Alex. & Co., Pittsburgh, Pa.
Lean, D. R., Co., Pittsburgh, Pa.
McClure, Amster & Co., Pittsburgh, Pa.
Pittsburgh Iron & Steel Engineering Co., Pittsburgh, Pa.
Smythe, S. R. Co., Incorporated, Pittsburgh, Pa.
Swindell, W. & Bros., Pittsburgh, Pa.

Engines, Gas.

Otto Gas Engine Works, Phila., Pa.
Rollason Gas Engine, Havemayer Bldg., N. Y.

Engines, Gas and Gasoline.

Buckeye Mfg. Co., Union City, Ind.
Springfield Gas Engine Co., Springfield, Ohio.

Engines, Steam, Makers of.

Bass Foundry & Machine Works, Ft. Wayne, Ind.
Chandler & Taylor Co., Indianapolis, Ind.
Erie Engine Works, Erie, Pa.
Lane & Bodley Co., Cincinnati, Ohio.
Norwalk Iron Works Co., So. Norwalk, Conn.
Penna. Diamond Drill & Mfg. Co., Birdsboro, Pa.
Phila. Engineering Works, Phila., Pa.
Southwark Foundry & Machine Co., Phila., Pa.
Tod, William & Co., Youngstown, O.
Totten & Hogg Iron & Steel Fdry. Co., Pittsburgh, Pa.
Wetherill, Robt. & Co., Chester, Pa.

Exhaust Tumblers.

Sweetser, W. A., Brockton, Mass.

Expansion Bolts.

Boone, W. C. Mfg. Co., Boonton, N. J.
Church, Isaac, Toledo, O.
Steward & Romaine Mfg. Co., Phila., Pa.

Faucets, Self-Measuring.

Lane Bros., Poughkeepsie, N. Y.

Faucets, Wooden, Makers of.

John Sommer's Son, Newark, N. J.

Feed-Water Heaters and Purifiers.

Davis, I. B. & Son, Hartford, Conn.
Goubert Mfg. Co., 32 Cortlandt St., N. Y.
Harrison Safety Boiler Works, Phila., Pa.
National Pipe Bending Co., New Haven, Conn.
Taunton Locomotive Mfg. Co., Taunton, Mass.
Webster, Warren & Co., Camden, N. J.
Whitlock Cold Pipe Co., Elmwood, Conn.

Fencing, Iron and Wire.

Barnum, E. T., Detroit, Mich.
Champion Iron Co., Kenton, O.
Cleveland Fence Co., Indianapolis, Ind.
Clinton Wire Cloth Co., Clinton, Mass.
Gilbert & Bennett Mfg. Co., 42 Cliff St., Kilmer Mfg. Co., Newburgh, N. Y.
McCallip Fence & Wire Wks., Columbus, Ohio.
Mast, Foss & Co., Springfield, O.
The Van Dorn Iron Works Co., Cleveland, O.

Files, Importers of.

Moss, F. W., 80 John St., N. Y.

Files and Rasps, Manufacturers of.

Arcade File Works, Anderson, Ind.
Banker & White, Troy, N. Y.
Barnett, G. & H., 41 & 43 Richmond, Phila.
McClaffrey File Co., Philadelphia.
Nicholson File Co., Providence, R. I.

Fire Brick, Makers of.

Borgner, Cyrus, Philadelphia, Pa.
Gardner, Jas. & Son, Cumberland, Md.
Kreischer, B. & Sons, foot E. Houston St., N. Y.
Maurer, H. & Son, 420 E. 23d, N. Y.
Ostrander Fire Brick Co., Troy, N. Y.
Valentine, M. D. & Bro., Woodbridge.

Fishing Tackle.

Dane, Stoddard & Kendall, Boston, Mass.

Flint and Emery Paper.

Baeder, Adamson & Co., Phila., Pa.

Flour Sifters.

Bromwell Brush & Wire Goods Co., Cincinnati, Ohio.
Meyers, Fred. J. Mfg. Co., Hamilton, O.

Flue Cleaners.

Mackey, Jas. T., St. Louis, Mo.

Fodder Cutters.

Silver Mfg. Co., Salem, O.

Forges, Portable & Co.

Buffalo Forge Co., Buffalo, N. Y.
Champion Blower & Forge Co., Lancaster, Pa.
Sturtevant, B. F. Co., Boston, Mass.

Forgings, Iron and Steel.

Bethlehem Iron Co., S. Bethlehem, Pa.
Cambria Steel-Cambria Iron Co., Johnstown, Pa.
Frankford Steel Co., Phila., Pa.
Scranton Forging Co., Scranton, Pa.
U. S. Projectile Co., Brooklyn, N. Y.

Forks, Hay and Manure.

Iowa Farming Tool Co., Ft. Madison, Iowa.

Foundry Facings.

Dixon, Jos., Crucible Co., Jersey City, N. J.

Smith, J. D., Fdy. Supply Co., Cinn., O.

Foundry Kiddles.

Estey, W. S., 65 Fulton, N. Y.

Foundry Supplies.

Diamond Clamp & Flask Co., Richmond, Ind.
S. Obermayer Co., Cincinnati, O.
Smith, J. D., Fdy. Supply Co., Cinn., O.

Friction Clutches.

Brown, A. & F., 17 Dey St., N. Y.
Keystone Clutch & Mch. Wks., Phila., Pa.
Moore & White Co., Philadelphia, Pa.

Friction Cone.

Evans Friction Cone Co., Boston, Mass.

Galvanizing Kettles.

Sands, Thos., Nashua, N. H.

Galvanized Material.

Jersey City Galvanizing Co., 112 John St., N. Y.

Gas Producers.

Wood, R. D. & Co., Philadelphia, Pa.

Gas & Steam Fitters' Supplies.

Pancoast, Henry B. & Co., Phila., Pa.

Gate Hinges.

Wrightsville Hdw. Co., Wrightsville, Pa.

Gauge, Rolling Mill.

Haines Gauge Co., Philadelphia, Pa.

Gear Cutters.

D. E. Whiton Mach. Co., New London, Conn.

Gears.

Boston Gear Works, Boston, Mass.
Gleason Tool Co., Rochester, N. Y.
Poole, Robt. & Son Co., Baltimore, Md.
U. S. Projectile Co., Brooklyn, N. Y.

Glass Cutters.

Monce, S. G., Bristol, Conn.

Glue.

Baeder, Adamson & Co., Phila., Pa.
Dodd, A. W. & Co., Gloucester, Mass.
Russia Cement Co., Gloucester, Mass.

Grass Carriers.

Glennon, J. & Co., Chicago, Ill.

Grass Catchers.

Bell, Jno. W. & Co., Mercer, Pa.
Supplee Hardware Co., Phila., Pa.

Grinding and Polishing Machines.

Herrick & Cowell, New Haven, Conn.
Norton Emery Wheel Co., Worcester, Mass.

Grindstone Dressing Machinery.

Blake & Johnson, Waterbury, Conn.

Grindstones.

Cleveland Stove Co., Cleveland, O.

Gun Implements.

Union Hdw. Co., Torrington, Conn.

Gunpowder, Makers of.

Lafin & Rand Powder Co., 29 Murray St., N. Y.

Handles.

New York Mallet and Handle Wks., 456 E. Houston St., N. Y.

Hangers, Door.

Coburn Trolley Track Mfg. Co., Holyoke, Mass.

Hardware Comm'n Merchants.

Graham, John H. & Co., 111 Chambers St., New York.

Jacobus, W. H., 90 Chambers, N. Y.

Hardware Manufacturers.

Stearns, E. C. & Co., Syracuse, N. Y.
Union Mfg. Co., 103 Chambers, N. Y.
Yale & Towne Mfg. Co., Stamford, Conn.

Hardware Mfrs.' Agents.

Bingham, W. Co., Cleveland, O.
Clarke, Thomas St. John, N. B.
Graham, John H. & Co., 113 Chambers.
Sickles, Sweet & Lyon, 35 Barclay, N. Y.

Hardware Specialties.

Acme Shear Co., Bridgeport, Conn.
Berger Bros., Philadelphia, Pa.
Bourke Mfg. Co., Youngstown, O.
Clark Mfg. Co., Buffalo, N. Y.
Enterprise Mfg. Co., Philadelphia, Pa.
Ette & Henger Mfg. Co., St. Louis, Mo.
Gwinner Mfg. Co., Hamilton, O.
Haines & Zimmerman, Phila., Pa.
Johnson, S. C., Racine, Wis.
New Britain Hdw. Mfg. Co., New Britain, Conn.

North Bros. Mfg. Co., Philadelphia, Pa.
Peabody & Parks, Troy, N. Y.
Scranton & Co., New Haven, Conn.
Shepard, Sidney & Co., Buffalo, N. Y.
Wilson, J. Fred., Worcester, Mass.
Wrightsville Hdw. Co., Wrightsville, Pa.

Harness Snaps.

Covert Mfg. Co., West Troy, N. Y.
Covert's Saddlery Wks., Farmer, N. Y.
Fitch, W. & E. T., New Haven, Conn.

Hoisting Machines.

Box, Alfred & Co., 314 Green, Phila.
Brown Hoisting & Conveying Mch. Co., Cleveland, Ohio.

Fulton Iron & Engine Wks., Detroit, Mich.

Harrington, E., Son & Co., Phila.

Lane Bros., Poughkeepsie, N. Y.

Lidgerwood Mfg. Co., 96 Liberty, N. Y.

McCoy, Jos. F. & Co., 26 Warren St.

Morris & Beekley, Philadelphia.

Morse Mfg. & Fdy. Co., Milwaukee, Wis.

Morse, Williams & Co., Phila.

Sellers, Wm. & Co., Phila. and N. Y.

Spedel, J. G., Reading, Pa.

Yale & Towne mfg. Co., Stamford, Ct.

Hollow Ware.

Avery Stamping Co., Cleveland, O.
Bronson Supply Co., Cleveland, Ohio.
Cleveland Stamping & Tool Co., Cleveland, O.

Hollow Ware, Aluminum.

Illinois Pure Aluminum Co., Lemont, Ill.

Wohler Aluminum Co., Chicago, Ill.

Horse Nails, Makers of.

Capewell Horse Nail Co., Hartford, Conn.

National Horse Nail Co., Vergennes, Vt.

Putnam Nail Co., Neponset, Boston, Mass.

Horse and Mule Shoes, Makers of.

Bryden Horse Shoe Co., Catsauqua, N. Y.

Burden Iron Co., Troy, N. Y.

Crescent Horse Shoe & Iron Co., Max Meadows, Va.

Diamond State Iron Co., Wilmington, Del.

Old Dominion Iron & Nail Works Co., Richmond, Va.

Phoenix Horse Shoe Co., Poughkeepsie, N. Y.

Rhode Island Perkins Horse Shoe Co., Providence.

Shoenberger & Co., Pittsburgh, Pa.

Standard Horse Shoe Co., Boston, Mass.

Hose Menders.

Hudson, C. E. & Co., Leominster, Mass.

Jones, M. D. & Co., Boston, Mass.

Hose.

N. Y. Belting & Packing Co., Ltd., 15 Park Row, N. Y.

Hydrants, & Co.

McLean, John, 296 & 298 Monroe, N. Y.

Hydraulic Forging.

U. S. Projectile Co., Brooklyn, N. Y.

Hydraulic Jacks.

Dudgeon, Richard, 24 Columbia, N. Y.

McCoy, Jos. F. Co., 26 Warren St., N. Y.

Ice Breakers.

Clement & Dunbar, Philadelphia, Pa.

Ice Cream Freezers.

Clement & Dunbar, Phila., Pa.

North Bros. Mfg. Co., Phila., Pa.

Packer, C. W., Philadelphia, Pa.

Tatum, S. C. & Co., Cincinnati, Ohio.

White Mountain Freezer Co., Nashua, N. H.

Injectors.

Eyoun-Evans Mfg. Co., Philadelphia, Pa.

Jenkins Bros., New York.

Sherwood Mfg. Co., Buffalo, N. Y.

Insurance, Boiler.

Hartford Steam Boiler Inspection & Insurance Co., Hartford, Conn.

Iron and Steel, Swedish.

Lundberg, Gustaf, Boston, Mass.

Milne, A. & Co., 1 Broadway, N. Y.

Iron Commission Brokers.

Butze, Adolph, St. Louis, Mo.

Corning, Edw. & Co., 29 B'way, N. Y.

Cotton, Barclay W. & Co., Phila.

Etting, Edw. J., Philadelphia.

Hogan, John L. & Co., Philadelphia, Pa.

Hoffman, J. W. & Co., Philadelphia.

Levi, Henry & Co., Philadelphia.

Kesley, Jerome & Co., Philadelphia.

Lea, J. Tatnall & Co., Philadelphia.

Mohr, J. J., 430 Walnut, Philadelphia.

Pilling & Crane, Philadelphia, Pa.

Wister, L. & R. & Co., Phila., Pa.

Iron Ore.

Samuel, Frank, Philadelphia, Pa.

Iron, Merchants.

Barns, C. K. & Co., Philadelphia, Pa.

Boston & Lovell, 70 West, N. Y.

Bussentius & Cunliffe, Philadelphia.

Corning, Edw. & Co., 29 B'way, N. Y.

Cox, Justice, Jr., Philadelphia.

Cotton, Barclay W. & Co., Phila.

Hoffman, J. W. & Co., Philadelphia.

North Bros. Mfg. Co., Philadelphia, Pa.
Peabody & Parks, Troy, N. Y.
Scranton & Co., New Haven, Conn.
Shepard, Sidney & Co., Buffalo, N. Y.
Wilson, J. Fred., Worcester, Mass.
Wrightsville Hdw. Co., Wrightsville, Pa.

Iron, Sheet, Manufacturers of.

Cambridge Iron & Steel Co., Cambridge, Ohio.
W. Dewees Wood Co., Lim., McKeesport, Pa.

Iron Vases.

Walbridge & Co., Buffalo, N. Y.

Ironwork, Ornamental.

Barnum, E. T., Detroit, Mich.
Champion Iron Co., Kenton, O.
Ludlow-Saylor Wire Co., St. Louis, Mo.
Mast, Foss & Co., Springfield, O.
The Van Dorn Iron Works Co., Cleveland, O.

Keys.

Wollensak, J. F., Chicago, Ill.

Ladles.

Detroit Fdy. Equipment Co., Detroit, Mich.

Lanterns.

Steam Gauge & Lantern Co., Syracuse, N. Y.

Lathes.

Dietz, Schumacher & Co., Cincinnati, O.
Draper Machine Tool Co., Worcester, Mass.

Harrington, E. Son & Co., Phila., Pa.

Johnson, Israel H., Jr. & Co., Philadelphia, Pa.

New Haven Mfg. Co., New Haven, Conn.

Sebastian Lathe Co., Cincinnati, O.

Seneca Falls Mfg. Co., Seneca Falls, N. Y.

Lathing, Wire.

Clinton Wire Cloth Co., Clinton, Mass.
N. J. Wire Cloth Co., Trenton, N. J.
Wright & Colton Wire Cloth Co., Worcester, Mass.

Laundry Machines.

Johnson, S. C., Racine, Wis.

Lawn Mowers.

Blair Mfg. Co., Springfield, Mass.
Chadborn & Coldwell Mfg. Co., Newburg, N. Y.

Coldwell Lawn Mower Co., Newburg, N. Y.

Dille & Anderson, Richmond, Ind.

Dille & McGuire Mfg. Co., Richmond, Ind.

Enterprise Mfg. Co., Philadelphia, Pa.

F. & N. Mfg. Co., Richmond, Ind.

Henley, M. C., Richmond, Ind.</

- Place, Geo., 145 Broadway, N. Y.
 Poole, Robt. & Son Co., Baltimore, Md.
 Powell Planer Co., Worcester, Mass.
 Pratt & Whitney Co., Hartford, Conn.
 Prentiss Tool & Supply Co., N. Y.
 Scranton Supply & Machy. Co., Scranton, Pa.
 Sellers, Wm. & Co., Phila.
 Seyfert's Sons, L. V., Philadelphia, Pa.
 Sigourney Tool Co., Hartford, Conn.
 Steptoe, J. & Co., Cincinnati, O.
 Stow Flexible Shaft Co., Ltd., Phila.
 Toomey, Frank, Philadelphia, Pa.
 Wettherill, Robert & Co., Chester, Pa.
 Wickes Bros., Saginaw, Mich.
 Wilson, W. A., Rochester, N. Y.
- Machinery for Hardware Manufacturers.**
 Adt, Jno. & Son, New Haven, Conn.
- Machine Knives.**
 Loring, Coes & Co., Worcester, Mass.
 Simonds Mfg. Co., Fitchburg, Mass.
 New Britain Hdw. Mfg. Co., New Britain, Conn.
- Machine Screws.**
 New Britain Hdw. Mfg. Co., New Britain, Conn.
- Machine Tools.—See Machinery.**
- Machine Work.**
 Papping, J., 58th St. & 11th Ave., N. Y. City.
- Machinists' Scales.**
 Coffin & Leighton, Syracuse, N. Y.
 Starrett, L. S., Athol, Mass.
- Machinists' Tools and Supplies.**
 King, J. M. & Co., Waterford, N. Y.
 Sellers, Wm. & Co., Inc., Phila.
- Mallets.**
 N. Y. Mallet & Handle Works, N. Y.
- Mangles.**
 Johnson, S. C., Racine, Wis.
- Manufacturing Sites.**
 Illinois Central R. R., Chicago, Ill.
- Measuring Tapes.**
 Keuffel & Esser Co., N. Y.
 Lufkin Rule Co., Saginaw, Mich.
- Meat Choppers.**
 Clauss Shear Co., Fremont, Ohio.
- Mechanical Instruction.**
 Correspondence School of Mechanics, Scranton, Pa.
- Metals.**
 Pearson, Wm. S., 100 Chambers, N. Y.
 Hendricks Bros., 49 Cliff, N. Y.
- Metal Brokers.**
 American Metal Co., N. Y.
- Metallurgists.**
 Britton, J. Blodgett, Phila., Pa.
- Milk Cans and Trimmings.**
 Shepard, Sidney & Co., Buffalo, N. Y.
- Mining Knives.**
 Palmer Hdw. Mfg. Co., Troy, N. Y.
- Mine Lamps.**
 Darby, Edw. & Sons, Phila., Pa.
 Leonard, B. E., Scranton, Pa.
- Mining Screens.**
 Harrington & King Perforating Co., Chicago, Ill.
 Howard & Morse, 45 Fulton, N. Y.
- Models, Makers of.**
 Franklin, H. H. Mfg. Co., Syracuse, N. Y.
 Ideal Machine Works, Hartford, Conn.
 Rhodes, L. E. Co., Hartford, Conn.
- Molding Sand.**
 Obermayer, S. Co., Cincinnati, O.
- Money Drawers.**
 Wadell Wooden Ware Wks., Greenfield, Ohio.
 Sun Mfg. Co., Greenfield, Ohio.
- Motors, Water and Electric.**
 C. & C. Electric Co., 402 and 404 Greenwich St., N. Y.
 Dallett, Thomas H. & Co., Phila., Pa.
- Nail Keg Stock.**
 Crescent Mfg. Co., Detroit Mich.
- Nail Machinery.**
 Pittsburgh Mfg. Co., Pittsburgh, Pa.
- Nail and Tack Pullers.**
 Scranton & Co., New Haven, Conn.
 Specialty Mfg. Co., Hartford, Conn.
- Nails (Cut) and Spikes.**
 Borden & Lovell, 70 West, N. Y.
 Cumberland Nail & Iron Co., Phila.
 Pottstown Iron Co., Pottstown, Pa.
 Riverside Iron Wks., Wheeling, W. Va.
- Nickel Platers' Supplies.**
 Hanson & Van Winkle Co., Newark, N. J.
 Zucker & Levett Chemical Co., 10 to 14 Grand St., N. Y.
- Norway Shapes, Rollers of.**
 Rowland, William & Harvey, Frankford, Philadelphia.
- Novelty Manufacturers.**
 Franklin, H. H. Mfg. Co., Syracuse, N. Y.
 Ideal Machine Works, Hartford, Conn.
 Ransom Hdw. Co., Burlington, Vt.
- Nut Machines.**
 Dunham Nut Co., Unionville, Ct.
- Nuts, Bolts, &c., Makers of.**
 American Bolt Co., Lowell, Mass.
 American Screw Co., Providence, R. I.
 Blake & Johnson, Waterbury, Conn.
 Dunham Nut Co., Unionville, Conn.
 Haskell, Wm. H. Co., Pawtucket, R. I.
 Mt. Carmel Bolt Co., Mt. Carmel, Conn.
 Pennsylvania Bolt & Nut Co., Lebanon, Pa.
 Port Chester Bolt & Nut Co., Port Chester, N. Y.
 Russell, Burdall & Ward, Port Chester, N. Y.
 Sternbergh, J. H. & Son, Reading, Pa.
 Wilson, J. Fred., Worcester, Mass.
 Wm. H. Haskell Co., Pawtucket, R. I.
- Oil Cans and Lubricators.**
 Sherwood Mfg. Co., Buffalo, N. Y.
- Oilers.**
 Wilmot & Hobbs Mfg. Co., Bridgeport, Conn.
- Oil Stones.**
 Pike Mfg. Co., Pike Station, N. H.
- Ores.**
 Wister, Francis, Philadelphia, Pa.
- Ox Shoes.**
 Scranton Forging Co., Scranton, Pa.
- Packing.**
 Morrison, Robert, St. Louis, Mo.
 N. Y. Belting & Packing Co., Ltd., N. Y.
- Padlocks.**
 Ames Sword Co., Chicopee, Mass.
 Fraim, E. T., Lancaster, Pa.
 Independent Electric Co., Chicago, Ill.
 Shultz Mfg. Co., Phila., Pa.
 Wolf, W. & L., Phila., Pa.
- Paint Burners.**
 Dangler Stove & Mfg. Co., Cleveland, Ohio.
- Paint Cans.**
 Wilmot & Hobbs Mfg. Co., Bridgeport, Conn.
- Pants Stretcher.**
 Covert Mfg. Co., West Troy, N. Y.
- Patent Solicitors.**
 Butler, C. N., Phila., Pa.
 Hewson & Howson, Philadelphia and Washington.
 Jenner, H. W. T., Washington, D. C.
 Stocking, E. B., Washington, D. C.
- Pattern Letters.**
 Wells, Heber, 157 William St., N. Y.
- Perforated Metal.**
 Clinton Wire Cloth Co., Clinton, Mass.
 Harrington & King Perforating Co., Chicago, Ill.
 Hendrick Mfg. Co., Ltd., Carbondale, Pa.
- Phosphor Bronze.**
 Phosphor Bronze Smelting Co., Limited, Philadelphia.
- Phosphor Tin.**
 Crescent Phosphorized Metal Co., Philadelphia, Pa.
 Halk & Naumann, 518 Pearl, N. Y.
- Picks and Mattocks.**
 Plumb, Fayette R., Philadelphia, Pa.
- Pig Iron.**
 Houston, C. B. & Co., Philadelphia, Pa.
 Montour Iron & Steel Co., Danville, Pa.
 Naylor & Co., 45 Wall, N. Y.
 Pilling & Crane, Philadelphia, Pa.
 Samuel, Frank, Philadelphia, Pa.
- Pig Iron Storage.**
 Am. Pig Iron Storage Warrant Co., 44 Wall, N. Y.
- Pile Drivers.**
 Vulcan Iron Works, Chicago, Ill.
- Pipe, Bent.**
 National Pipe Bending Co., New Haven, Conn.
- Pipe Cutting and Threading Machines.**
 Armstrong Mfg. Co., Bridgeport, Conn.
 Bignall & Keeler Mfg. Co., St. Louis, Mo.
 Detrick & Harvey Mch. Co., Baltimore, Md.
 Merrill Mfg. Co., Toledo, O.
 Hancock, Henry B. & Co., Phila.
 Saunders Sons, D., Yonkers, N. Y.
 Walworth Mfg. Co., Boston, Mass.
- Pipe Grips.**
 Prentiss Vise Co., 44 Barclay, N. Y.
- Pipes, Fittings, &c., Makers of.**
 Mc Nab & Harlin Mfg. Co., N. Y.
- Pipe, Water and Gas, Makers of.**
 Cumberland Nail & Iron Co., Phila., Pa.
 Donaldson Iron Co., Emaus, Pa.
 Riverside Iron Works, Wheeling, W. Va.
 Wood, R. D. & Co., Philadelphia, Pa.
- Plane Irons, Manufacturers of.**
 Buck Bros., Millbury, Mass.
 Buck, Chas., Millbury, Mass.
- Planers.**
 Detrick & Harvey Mch. Co., Baltimore, Md.
 New Haven Mfg. Co., New Haven, Conn.
 Powell Planer Co., Worcester, Mass.
 Wilson, W. A., Worcester, Mass.
- Planes, Manufacturers of.**
 Stanley Rule & Level Co., N. Y.
- Plated Ware.**
 Boardman, L. & Son, New Haddam, Ct.
 Holmes & Edwards Silver Co., Bridgeport, Conn.
 Kelley & McBean, Niagara Falls, N. Y.
 Rogers, Wm. Mfg. Co., Hartford, Ct.
- Plate, Iron and Steel, Mfrs. of.**
 Aetna-Standard Iron & Steel Co., Bridgeport, O.
 Lukens Iron & Steel Co., Coatesville, Pa.
 Mahoning Valley Iron Co., Youngstown, Ohio.
 Moorhead-McLean Co., Pittsburgh, Pa.
 Mollvain & Sons, Reading, Pa.
 Pottstown Iron Co., Pottstown, Pa.
 Pottsville Iron & Steel Co., Pottsville, Pa.
 Singer, Nimalck & Co., Pittsburgh, Pa.
 The Mahoning Valley Iron Co., Youngstown, O.
 Wood, Alan Co., Philadelphia.
- Plating, Nickel, Brass and Silver.**
 Wilmot & Hobbs Mfg. Co., Bridgeport, Conn.
- Pokes.**
 Bishop, A. W., Berea, Ohio.
- Polishing Machines.**
 Watson & Stillman, 204 E. 43d, N. Y.
- Post Hole Diggers.**
 Gibbs Mfg. Co., Canton, Ohio.
 Kohler, F. E. & Co., Canton, O.
- Poultry Nettings.**
 Barnum, E. T., Detroit, Mich.
 Gilbert & Bennett Mfg. Co., 42 Cliff St., N. Y.
 N. J. Wire Cloth Co., Trenton, N. J.
 "Silver Finish."
 Tyler Wire Works Co., W. S., Cleveland, O.
 Wright & Colton Wire Cloth Co., Worcester, Mass.
- Powder.**
 Ladin & Rand Powder Co., 29 Murray.
 New York Powder Co., 62 Liberty St., N. Y.
- Power Hack Saws.**
 Millers Falls Co., 93 Reade St., N. Y.
- Power Hammers.**
 Dielen & Eisenhardt, Philadelphia.
 Dupont Mfg. Co., St. Johnsbury, Vt.
 Jenkins & Lingle, Bellefonte, Pa.
 Long & Allstatter Co., Hamilton, Ohio.
 Scranton & Co., New Haven, Conn.
- Power Transmitting Machinery.**
 Dodge Mfg. Co., Mishawaka, Ind.
- Presses, Dies, &c.**
 E. W. Bliss Co., Brooklyn, N. Y.
 Crosby, G. A. & Co., Chicago, Ill.
 Ferracute Mch. Co., Bridgeport, N. J.
 Stark Mch. & Tool Co., Buffalo, N. Y.
 Stiles & Parker Press Co., Brooklyn, N. Y.
 Waterbury Mch. Co., Waterbury, Ct.
- Presses, Power, Makers of.**
 Bliss, E. W. Co., Brooklyn, N. Y.
 Manville, E. J. Mch. Co., Waterbury, Ct.
 Merriman, A. H., Meriden, Conn.
 Stark Mch. & Tool Co., Buffalo, N. Y.
 Waterbury Farrel Foundry & Machine Co., Waterbury, Conn.
- Pulleys.**
 Brown, A. & F., 17 Dey St., N. Y.
 Dodge Mfg. Co., Mishawaka, Ind.
 Keystone Clutch Mch. Wks., Phila., Pa.
 Lake, J. H. & D. Co., Massillon, O.
 Reeves Pulley Co., Columbus, Ind.
- Pulverizing Mills.**
 Bradley Fertilizer Co., Boston, Mass.
- Pumping Machinery.**
 Dean Bros. Steam Pump Works, Indianapolis, Ind.
 Hooker-Colville Steam Pump Co., St. Louis, Mo.
 Lucas, C. O. & Co., Greenview, Ohio.
 McGowan, J. H. & Co., Cincinnati, O.
 Maslin, J. & Son, Jersey City, N. J.
 Norwalk Iron Works Co., So. Norwalk, Conn.
 Southwark Fdy. & Mch. Co., Phila., Pa.
 Valley Pump Works, Easthampton, Worthington, Henry R., 86 and 88 Liberty St., N. Y.
- Pumps, Makers of.**
 Bellevue Pump Co., Bellevue, Iowa.
 Denning Co., Salem, O.
 Douglass, W. & B., Middletown, Conn.
 Mast, Foss & Co., Springfield, O.
 Myers, F. E. & Bro., Ashland, O.
- Punches.**
 Richards, I. P., Providence, R. I.
- Punches and Shears, Hand and Power.**
 E. W. Bliss Co., Brooklyn, N. Y.
 Crosby, G. A. & Co., Chicago, Ill.
 Ferracute Mch. Co., Bridgeport, N. J.
 Henderer, A. L., Wilmington, Del.
 Long & Allstatter Co., Hamilton, Ohio.
 Stark Mch. & Tool Co., Buffalo, N. Y.
 Stiles & Parker Press Co., Brooklyn, N. Y.
 Wais & Roos Punch & Shear Co., Cincinnati, Ohio.
 Waterbury Farrel Foundry & Machine Co., Waterbury, Conn.
 Watson & Stillman, 204 E. 43d, N. Y.
- Rails, Old and New.**
 Perry, W. H. & Co., Providence, R. I.
- Rat and Mouse Traps.**
 Estey, W. S., 65 Fulton, N. Y.
 Ripley Mfg. Co., Unionville, Conn.
 Sun Mfg. Co., Greenfield, Ohio.
- Razor Guard.**
 Murphy, P. D., Lockport, N. Y.
- Razors.**
 J. R. Torrey Razor Co., Worcester, Mass.
- Reels.**
 Hendryx, A. B. Co., New Haven, Conn.
- Refrigerators.**
 Monroe Refrigerator Co., Lockland, O.
 Pierce, Geo. N. & Co., Buffalo, N. Y.
- Refrigerator Door Fasteners.**
 Conroy, P. J. & Co., Philadelphia.
- Rivers.**
 Blake & Johnson, Waterbury, Conn.
 Boyce Rivet Co., Muncie, Ind.
 Borden Iron Co., Troy, N. Y.
 Clark & Cowles, Plainville, Conn.
 Cobb & Drew, Plymouth, Mass.
 New England Screw Co., Boston, Mass.
 Sternbergh, J. H. & Son, Reading, Pa.
 Townsend, W. P. & Co., New Brighton, Pa.
- Riveting Machines.**
 Adt, Jno. & Sons, New Haven, Conn.
- Rock Drills.**
 Band Drill Co., 23 Park Place, N. Y.
- Rolling Mill Machinery.**
 Birmingham Iron Fdry, Birmingham, Conn.
 Booth, The Lloyd Co., Youngstown, O.
 Leechburg Foundry & Mch. Co., Pittsburgh, Pa.
 Morgan Construction Co., Worcester, Mass.
 Robinson-Rea Mfg. Co., Pittsburgh.
 Totten & Hogg Iron and Steel Fdry Co., Pittsburgh, Pa.
 Trethewey Mfg. Co., Pittsburgh, Pa.
 Waterbury Farrel Foundry & Mch. Co., Waterbury, Conn.
- Rolls, Chilled, Sand and Steel.**
 Birmingham Iron Foundry, Birmingham, Conn.
 Booth, The Lloyd Co., Youngstown, O.
 East Chicago Fdy Co., Chicago, Ill.
 Garrison, A. Fdy. Co., Pittsburgh, Pa.
 Robinson-Rea Mfg. Co., Pittsburgh, Pa.
 Seaman, Sleeth & Black, Pittsburgh.
 Totten & Hogg Iron and Steel Fdry Co., Pittsburgh, Pa.
- Roofing.**
 Cambridge Roofing Co., Cambridge, O.
 Cincinnati Corrugating Co., Piqua, O.
 Kaneberg Roofing Co., Canton, O.
 N. Y. Iron Roofing & Corrugating Co., Jersey City, N. J.
- Rope and Web Goods.**
 Covert Mfg. Co., West Troy, N. Y.
 Covert's Saddlery Wks., Farmer, N. Y.
- Rope Wheels.**
 Cresson, Geo. V. Co., Philadelphia, Pa.
- Rubber Goods.**
 Canfield, H. O., Bridgeport, Conn.
- Rules, Manufacturers of.**
 Keuffel & Esser Co., New York.
 Lufkin Rule Co., Saginaw, Mich.
 Stanley Rule & Level Co., 29 Chambers.
- Rust Preventive.**
 Bridgeport Gun Implement Co., 313-315 Broadway, N. Y.
- Sand Paper.**
 Baeder, Adamson & Co., Phila., Pa.
- Sash Balances.**
 Caldwell Mfg. Co., Rochester, N. Y.
 Pulman Sash Balance Co., Rochester, N. Y.
 Stearns, E. C. & Co., Syracuse, N. Y.
- Sash Cords and Chains.**
 Morton, Thos., 45 Elizabeth, N. Y.
 Ossawan Mills Co., Norwich, Conn.
 Samson Cordage Works, Boston, Mass.
 Smith & Egge Mfg. Co., Bridgeport.
- Sash Locks.**
 Columbian Sash & Door Lock Co., Wauseon, Ohio.
- Sash Pulleys.**
 Palmer Hardware Mfg. Co., Troy, N. Y.
- Sash Weights.**
 Brown, E. E. & Co., Philadelphia, Pa.
 Norton Bros., Chicago, Ill.
- Saw Filing Machines.**
 Disston, Henry & Sons, Philadelphia, Pa.
- Saws, Makers of.**
 Butler Mfg. Co., Boston, Mass.
 Disston, Henry & Sons, Phila., Pa.
 National Saw Co., 96 Reade St., N. Y.
 Simonds Mfg. Co., Fitchburg, Mass.
- Saw Vises.**
 Seneca Falls Mfg. Co., Seneca Falls, N. Y.
- Saw Sets.**
 Taintor Mfg. Co., 84-86 Chambers, N. Y.
- Scales, Manufacturers of.**
 Buffalo Scale Co., Buffalo, N. Y.
 Chatillon, John & Sons, 85-89 Cliff, N. Y.
- Scrapers, Road.**
 Am. Steel Scraper Co., Sydney, Ohio.
 Kilbourne & Jacobs Mfg. Co., Columbus, O.
 Sidney Steel Scraper Co., Sidney, O.
- Screens, Coal and Ore.**
 Hendrick Mfg. Co., Ltd., Carbondale, Pa.
- Screens, Door and Window.**
 Huebner Screen Door Co., Detroit, Mich.
 White, Van Glahn & Co., 15-17 Chatham Sq., N. Y.
- Screw Cutting Machinery.**
 Wells Bros. & Co., Greenfield, Mass.
 Wiley & Russell Mfg. Co., Greenfield, Mass.
- Screw Drivers.**
 Brown, R. H. & Co., New Haven, Conn.
 Mayhew, H. H. Co., Shelburne Falls, Mass.
- Screw Plate and Pipe Cutter.**
 Jarecki Mfg. Co., Erie, Pa.
- Screws, Makers of.**
 American Screw Co., Providence, R. I.
 Blake & Johnson, Waterbury, Conn.
 Wm. H. Haskell Co., Pawtucket.
 Miles, F. S., 205 Quarry, Philadelphia.
 New England Screw Co., Boston, Mass.
 Reynolds & Co., New Haven, Conn.
 Worcester Machine Screw Co., Worcester, Mass.
- Scroll Saws.**
 Barnes, W. F. & John, Rockford, Ill.
 Seneca Falls Mfg. Co., Seneca Falls, N. Y.
- Scythe Stones and Whetstones.**
 Pike Mfg. Co., Pike Station, N. H.
 Cleveland Stone Co., Cleveland, O.
- Sewing Machines.**
 Household Sewing Machine Co., Chicago, Ill.
- Shafting, Makers of.**
 Brown, A. & F., 17 Dey St., N. Y.
 Cresson, Geo. V. Co., Philadelphia, Pa.
 Fairmount Mch. Co., Philadelphia, Pa.
 Sellers, Wm. & Co., Inc., Phila., Pa.
 Stow Mfg. Co., Birmingham, N. Y.
- Shaft Support.**
 Decatur Shaft Support Co., Decatur, Ill.
- Shaped Iron and Steel, Manufacturers of.**
 Aetna-Standard Iron & Steel Co., Bridgeport, O.
 East Chicago Fdy Co., Chicago, Ill.

Allentown Rolling Mill, Allentown, Pa.
Lockhart Iron & Steel Co., Pittsburgh, Pa.
Passaic Rolling Mill Co., Paterson, N.J.
Pottsville Iron & Steel Co., Pottsville, Pa.
Roberts, A. & P. & Co., Phila., Pa.
The Phoenix Iron Co., Phila., Pa.
Tudor Iron Works, St. Louis, Mo.

Shears and Scissors.

Acme Shear Co., Bridgeport, Conn.
Heinrichs, R. Sons Co., Newark, N. J.

Sheet Iron and Steel, Manufacturers of.

Etna-Standard Iron and Steel Co., Bridgeport, O.
Cambridge Iron & Steel Co., Cambridge, Ohio.
Chess Bros., Pittsburgh, Pa.
Jersey City Galvanizing Co., 112 John St., N. Y.
Mahoning Valley Iron Co., Livingston, Ohio.
Moorhead-McCleane Co., Pittsburgh.
Pierson & Co., 29 Broadway, N. Y.
Singer, Nimick & Co., Ltd., Pittsburgh, Pa.
The Mahoning Valley Iron Co., Youngstown, O.
Alan Wood Co., Philadelphia.
W. Dewees Wood Co., McKeesport, Pa.

Sheet Zinc.

Matthiessen & Hegeler Zinc Co., La Salle, Ill.

Show Cases.

Union Show Case Co., Chicago, Ill.

Sinks.

Douglas, W. & B., Middletown, Conn.

Skates, Ice.

Winslow, Sam'l, Skate Mfg. Co., Worcester, Mass.

Skates, Roller.

Henley, M. C., Richmond, Ind.
Union Hardware Co., Torrington, Ct.
Winslow, Sam'l, Skate Mfg. Co., Worcester, Mass.

Slag Machines.

Cambria Iron Co., Johnstown, Pa.

Smelting Works.

Reeves, Paul S., 760 S. Broad, Phila.

Soldering Coppers.

Clendenin Bros., Baltimore, Md.
Covert Mfg. Co., West Troy, N. Y.

Speaking Tubes.

Ostrander, W. R. & Co., 204 Fulton St., N. Y.
Wollensak, J. F., Chicago, Ill.

Specialties, Pat. Articles.

Rhodes, L. E. Co., Hartford, Conn.

Spelter.

Matthiessen & Hegeler Zinc Co., La Salle, Ill.
Missouri Metal Co., St. Louis, Mo.

Spoons and Forks.

Boardman, L. & Son, New Haddam, Conn.
Holmes & Edwards Silver Co., Bridgeport, Conn.
Kelley & McBean, Niagara Falls, N. Y.
Rogers, The Wm. Mfg. Co., Hartford, Conn.

Sporting Goods.

Hartley & Graham, 313-315 B'way, N. Y.

Springs.

Clark & Cowles, Plainville, Ct.
Dunbar Bros., Bristol, Conn.
Miller & Van Winkle, Brooklyn, N. Y.
Morgan Spring Co., Worcester, Mass.
Roland, Wm. & Harvey, Phila., Pa.
Sabin Machine Co., Montpelier, Vt.
Tuck Mfg. Co., Brockton, Mass.
Washburn & Moen Mfg. Co., Worcester, Mass.
Wolf, R. H. & Co., Ltd., 118th St. and Harlem River, N. Y.

Spring Hinges.

Bommer Bros., Brooklyn, N. Y.
Pullman Sash Balance Co., Rochester, N. Y.
Stover Mfg. Co., Freeport, Ill.
Van Wagoner & Williams Hdw. Co., 14 Warren St., N. Y.

Stamped Ware.

Am. Stamping Co., 104 & 106 John St., New York.

Stamping Works.

Avery Stamping Co., Cleveland, O.
Cleveland Stamping & Tool Co., Cleveland, O.

Staples.

Cobb & Drew, Plymouth, Mass.
Titchener, E. H. & Co., Binghamton, N. Y.

Steam Gauges.

Bristol Co., Waterbury, Conn.

Steam Hammers, &c., Makers of.

Dienelt & Eisenhardt, Philadelphia.
Dudgeon, Richard, 24 Columbia Street, N. Y.
Tretzwey Mfg. Co., Pittsburgh, Pa.

Steam Heating & Oil Separators.

Webster, Warren & Co., Camden, N. J.

Steam Separators.

Goubert Mfg. Co., 32 Cortlandt St., N. Y.
Harrison Safety Boiler Wks., Phila., Pa.
Webster, Warren & Co., Camden, N. J.

Steam Specialties.

Lunkenheimer Co., Cincinnati, O.

Steel, Cold Rolled Strip.

Superior Steel Co., Pittsburgh, Pa.
Wilmut & Hobbs Mfg. Co., Bridgeport, Conn.

Steel Figures and Alphabets.

Krogsrud, W., 61 Fulton St., N. Y.

Steel Importers.

Abbott, Wheelock & Co., N. Y. and Boston.
Hobson, Francis, Seaman & Co., 97 John St., N. Y.
Jessop, Wm. & Sons, Sheffield, England, or 91 John, N. Y.
Milne, A. & Co., 1 Broadway, N. Y.
Newton & Shipman, 83 John, N. Y.
Wetherell Bros., 93 Liberty St., N. Y.
Whitney, A. R. & Co., B'way, N. Y.
Wolf, R. H. & Co., Ltd., 118th Street and Harlem River, N. Y.

Steel (Musher's Special).

Jones, B. M. & Co., Boston.

Steel Manufacturers.

Etna-Standard Iron & Steel Co., Bridgeport, O.
Bethlehem Iron Co., S. Bethlehem, Pa.
Baker, Hermann & Co., 103 Duane St.
Carbon Steel Co., Pittsburgh, Pa.
Chamber Steel Castings Co., Phila., Pa.
Chromite Steel Works, Brooklyn, N. Y.
Crescent Steel Co., Pittsburgh, Pa.
Frankford Steel Co., Philadelphia.
Gautier Steel Department of Cambria Iron Co., Johnstown, Pa.
Hobson, Francis, Seaman & Co., 97 John St., N. Y.
Jessop, Wm. & Sons, Sheffield, England, or 91 John, N. Y.
Kayser, Ellison & Co., Sheffield, Eng.
La Belle Steel Co., Pittsburgh, Pa.
Lukens Iron & Steel Co., Coatesville, Pa.
Moorhead-McCleane Co., Pittsburgh, Pa.
Moss, F. W., 83 John, N. Y.
Pottsville Iron and Steel Co., Pottsville, Pa.
Bowland, Wm. & Harvey, Frankford, Philadelphia.
Singer, Nimick & Co., Pittsburgh.
Superior Steel Co., Pittsburgh, Pa.
Ordway, S. & C., Sheffield, Eng.
Wetherell Bros., 93 Liberty, N. Y.
Wilmut & Hobbs Mfg. Co., Bridgeport, Conn.

Steel, Manufacturers' Agents.

Barns, C. K. & Co., Philadelphia, Pa.
Butze, Adolph, St. Louis, Mo.
Corning, Edw. & Co., 29 B'way, N. Y.
Lindsay, Jas. G. & Co., Phila., Pa.
Pierson & Co., 29 Broadway, N. Y.

Steel Rails, Manufacturers of.

Bethlehem Iron Co., S. Bethlehem, Pa.
Cambria Iron Co., Johnstown, Pa.
Montour Iron & Steel Co., Danville, Pa.
Riverside Iron Wks., Wheeling, W. Va.

Steel, Tool.

Frankford Steel Co., Philadelphia, Pa.
Jessop, Wm. & Sons, Sheffield, England, or 91 John, N. Y.
Jones, B. M. & Co., Boston, Mass.
La Belle Steel Co., Pittsburgh, Pa.

Step Ladders, Rolling.

Bicycle Step Ladder Co., Chicago, Ill.
Coburn Trolley Track Mfg. Co., Holyoke, Mass.
Croissant, M., Albany, N. Y.
Morley Bros., Saginaw, Mich.

Stocks and Dies.

Armstrong Mfg. Co., Bridgeport, Conn.
Billings & Spencer Co., Hartford, Conn.
Butterfield & Co., Derby Line, Vt.
Hart Mfg. Co., Cleveland, O.
Saunders' Sons, D., Yonkers, N. Y.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.

Stove Linings.

Ostrander Fire Brick Co., Troy, N. Y.

Stove Pipe Thimbles.

Cheney, S. & Son, Manlius, N. Y.

Stove Trucks.

Gwinner Mfg. Co., Hamilton, Ohio.

Stove Working Machinery.

Lincoln Iron Works, Rutland, Vt.

Street Lamps.

Steam Gauge & Lantern Co., Syracuse, N. Y.

Strops.

J. R. Torrey & Co., Worcester, Mass.

Structural Iron Work.

Lindsay, Jas. G. & Co., Phila., Pa.

Sulphuric Acid.

Matthiessen & Hegeler Zinc Co., La Salle, Ill.

Tacks, Brads, Staples, &c.

Anthony & Cushman Tack Co., Taunton, Mass.
Atlas Tack Corporation, Boston, Mass.
Clendenin Bros., Baltimore, Md.
Cobb & Drew, Plymouth, Mass.
Grand Crossing Tack Co., Grand Crossing, Ill.

Taps and Dies.

Butterfield & Co., Derby Line, Vt.
Carpenter, J. M., Tap & Die Co., Pawtucket, R. I.
Manning, Maxwell & Moore, 111 Liberty St., N. Y.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.

Testing Laboratories.

Riehle Bros. Testing Mach. Co., Philadelphia.

Testing Machines.

Riehle Bros. Testing Mach. Co., Phila.

Theatrical Hardware.

Wollensak, J. F., Chicago, Ill.

Thill Springs.

Frost Thill Spring Co., Boston, Mass.
Sabin Machine Co., Montpelier, Vt.

Timber and Mineral Lands.

Robertson, E. Co., Cincinnati, O.

Time Record.

Scattergood, H. W., Phila., Pa.

Tinning Process.

Sands, Thos., Nashua, N. H.

Tin Plate Machinery.

Lloyd Booth Co., Youngstown, Ohio.

Tinware.

Am. Stamping Co., 104 & 106 John St.

Tire Upsetters.

Butts & Ordway, Boston, Mass.

Toe Calks, Steel.

Burke, P. F., Boston, Mass.

Tool Blocks.

Hulbut-Rogers Mch. Co., South Sudbury, Mass.

Tool Chests.

Am. Tool Co., 200 W. Houston St., N. Y.

Tool Holders.

Armstrong Bros. Tool Co., Chicago, Ill.

Tools.

Brown, R. H. & Co., New Haven, Conn.
Mayhew, H. H. Co., Shelburne Falls, Mass.
Millers Falls Co., 93 Reade, N. Y.
Richardson, C. F. & Son, Athol, Mass.
Standard Tool Co., Athol, Mass.
Stanley, S. & Level Co., 29 Chambers.
Starrett, L. S., Athol, Mass.
Tower & Lyon, 95 Chambers St., N. Y.
Wilkinson, A. J. & Co., Boston, Mass.

Tools, Blacksmith and Wheelwright.

Buffalo Forge Co., Buffalo, N. Y.
Butts & Ordway, Boston, Mass.
Champion Blower & Forge Co., Lancaster, Pa.
Plumb, Fayette R., Philadelphia, Pa.
Wiley & Russell Mfg. Co., Greenfield, Mass.

Tools, Steam and Gas Fitters'.

Saunders' Sons, D., Yonkers, N. Y.

Torches, Oil and Gasoline.

Dangler Stove & Mfg. Co., Cleveland, O.
Schneider & Trenkamp Co., Cleveland, Ohio.

Transom Lifters.

Wollensak, J. F., Chicago, Ill.

Tricycles.

Toledo Metal Wheel Co., Toledo, Ohio.

Trucks, Manufacturers of.

Clark, G. P., Windsor Locks, Conn.

Tubes, Seamless Drawn Copper.

Ansonia Brass & Copper Co., 19 and 21 Cliff, N. Y.
Randolph & Clowes, Waterbury, Conn.

Tubes, Steel.

Lang's, John S. Son & Co., 4 Fletcher St., New York.
Shelby Steel Tube Co., Shelby, Ohio.
U. S. Projectile Co., Brooklyn, N. Y.

Tumbling Barrels.

Henderson Bros., Waterbury, Conn.

Turnbuckles.

Cleveland City Forge & Iron Co., Cleveland, O.
Merrill Bros., Brooklyn, E. D.

Twist Drills, Makers of.

Cleveland Twist Drill Co., Cleveland.
Morse Twist Drill & Machine Co., New Bedford, Mass.
New Process Twist Drill Co., Taunton, Mass.
Standard Tool Co., Cleveland.

Valves, Gas, Water and Steam.

Chapman Valve Mfg. Co., Boston.
Elyon-Evans Mfg. Co., Philadelphia, Pa.
Jenkins Bros., 71 John, N. Y.
Lunkenheimer Co., Cincinnati, O.
McNab & Harlin Mfg. Co., 66 John, N. Y.

Ventilating Fans.

Huyett & Smith Mfg. Co., Detroit, Mich.

Ventilator Appliances.

Howard & Morse, 10 Fulton St., N. Y.

Vise Jaws.

Newark Mch. Tool Co., Newark, N. J.

Vises.

Hollands Mfg. Co., Erie, Pa.
Howard Iron Works, Buffalo, N. Y.
Millers Falls Co., 93 Reade St., N. Y.
Prentiss Vise Co., 44 Barclay, N. Y.
Tower & Lyon, 95 Chambers St., N. Y.

Wagon Jacks.

Covert Mfg. Co., West Troy, N. Y.
Covert's Saddlery Works, Farmer, N. Y.

Washboards.

Olds Wagon Wks., Ft. Wayne, Ind.

Washers.

Haskell, Wm. H. Co., Pawtucket, R. I.
Milton Mfg. Co., Milton, Pa.
Sternbergh, J. H. & Son, Reading, Pa.

Washing Machines.

Diether & Barrows, Ft. Wayne, Ind.
Wayne, Anthony Mfg. Co., Ft. Wayne Ind.

Watches.

Ingersoll, R. H. & Bro., 65 Cortlandt St., N. Y.

Water Meters.

Worthington, Henry R., 86 & 88 Liberty St., N. Y.

Water Wheels.

Poole, Robt. & Son Co., Baltimore, Md.

Wheelbarrows.

Amer. Steel Scraper Co., Sidney, Ohio.
Bryan Mfg. Co., Bryan, Ohio.
Kilbourne & Jacobs Mfg. Co., Columbus, Ohio.
Sidney Steel Scraper Co., Sidney, O.
Toledo Wheelbarrow Wks., Toledo, O.

Window Cleaners.

Bourke Mfg. Co., Youngstown, O.

Window Cord, Makers of.

Samson Cordage Works, Boston, Mass.

Wire, Manufacturers of.

Gautier Steel Department of Cambria Iron Co., Johnstown, Pa.
Miller & Van Winkle, Brooklyn, N. Y.
New Castle Wire Nail Co., New Castle, Pa.
New Haven Wire Mfg. Co., New Haven, Conn.
Prentiss, Geo. W. & Co., Holyoke, Mass.
Salem Wire Nail Co., Salem, O.
Trenton Iron Co., Trenton, N. J.
Washburn & Moen Mfg. Co., Worcester.
Wetherell Bros., 93 Liberty St., N. Y.
Wolf, R. H. & Co., Ltd., 118th St. and Harlem River, N. Y.
Wright & Colton Wire Cloth Co., Worcester, Mass.

Wire Cloth.

Barnum, E. T., Detroit, Mich.
Clinton Wire Cloth Co., Clinton, Mass.
Darby, Edward & Sons, Philadelphia.
Essey, W. S., 65 Fulton, N. Y.
Gilbert & Bennett Mfg. Co., 42 Cliff.
Howard & Morse, 45 Fulton, N. Y.
N. J. Wire Cloth Co., Trenton, N. J.
Scheeler & Sons, Buffalo, N. Y.
Wickwire Bros., Cortland, N. Y.
Wright & Colton Wire Cloth Co., Worcester, Mass.
W. S. Tyler Wire Works Co., Cleve'd.

Wire Cutters.

King, J. M. & Co., Watertown, N. Y.

Wire Dies.

McFarland, Wm., Trenton, N. J.
Newton & Shipman, 83 John St., N. Y.

Wire Fences, See Fencing, Iron and Wire.

Wire Goods, Manufacturers of.

Bromwell Brush & Wire Goods Co., Cincinnati, Ohio.
Darby, Edward & Sons, Phila.
Gilbert & Bennett Mfg. Co., 42 Cliff St., N. Y.
Ludlow-Saylor Wire Co., St. Louis.
Ossavan Mills Co., Norwich, Conn.
Scheeler & Sons, Buffalo, N. Y.
Wickwire Bros., Cortland, N. Y.
Williamson, C. T., Wire Novelty Co., Newark, N. J.
Wire Goods Co., Worcester, Mass.

Wire Machinery.

Am. Tool Wks., Cleveland, O.
Manville, E. J. Mch. Co., Waterbury, Ct.
Morgan Construction Co., Worcester, Mass.
Waterbury Mch. Co., Waterbury, Conn.

Wire Straightening and Cutting Machinery.

Adt, John & Son, New Haven Conn.

Wire Nails.

Bond Nail Co., Raynham, Mass.
Indiana Wire Fence Co., Crawfordsville, Ind.
Kilmer Mfg. Co., Newburg, N. Y.
New Castle Wire Nail Co., New Castle, Pa.
Phillips, Townsend & Co., Phila., Pa.
Salem Wire Nail Co., Salem, O.
Taunton Wire Nail Co., Taunton, Mass.
Whitney, A. R. & Co., New York City.

Wire Rods, Steel.

New Castle Wire Nail Co., New Castle, Pa.
Washburn & Moen Mfg. Co., Worcester, Mass.
Whitney, A. R. & Co., 17 B'way, N. Y.
Wolf, R. H. & Co., Ltd., 118th Street and Harlem River, N. Y.

Wire Rope, Iron and Steel, Makers.

Broderick & Bascom Rope Co., St. Louis, Mo.
California Wire Works, San Francisco.
Hazard Mfg. Co., Wilkesbarre, Pa.
A. Leschen & Sons, Trenton, N. J.
Trenton Iron Co., Trenton, N. J.
Washburn & Moen Mfg. Co., Worcester, Mass.

Wire Rope Machinery.

Kay, J. F., Passaic, N. J.

Wood-Working Machinery.

Egan Co., Cincinnati, Ohio.
Seneca Falls Mfg. Co., Seneca Falls, N. Y.
Wilkinson, A. J. & Co., Boston, Mass.

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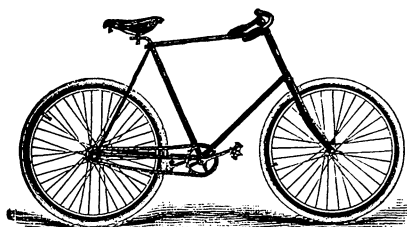
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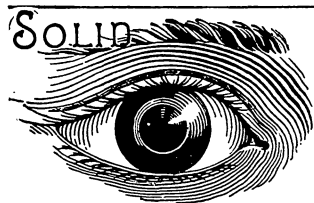
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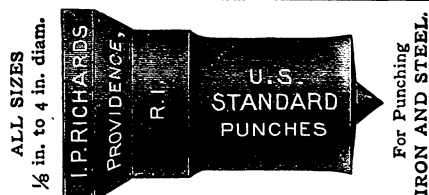


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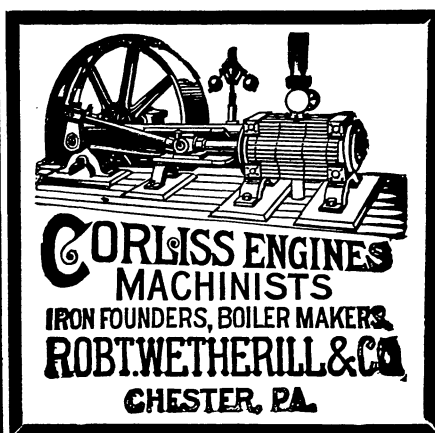
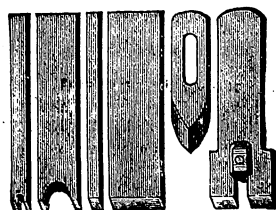
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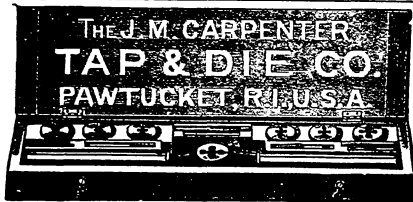
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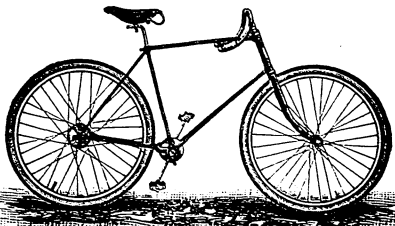
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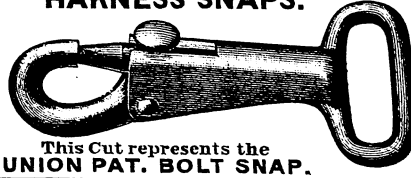
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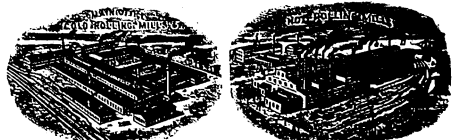
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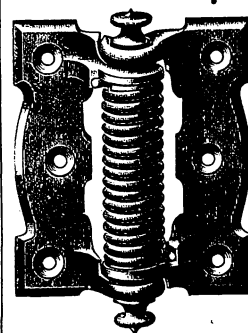
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THE IRON AGE

THURSDAY, MAY 17, 1894.

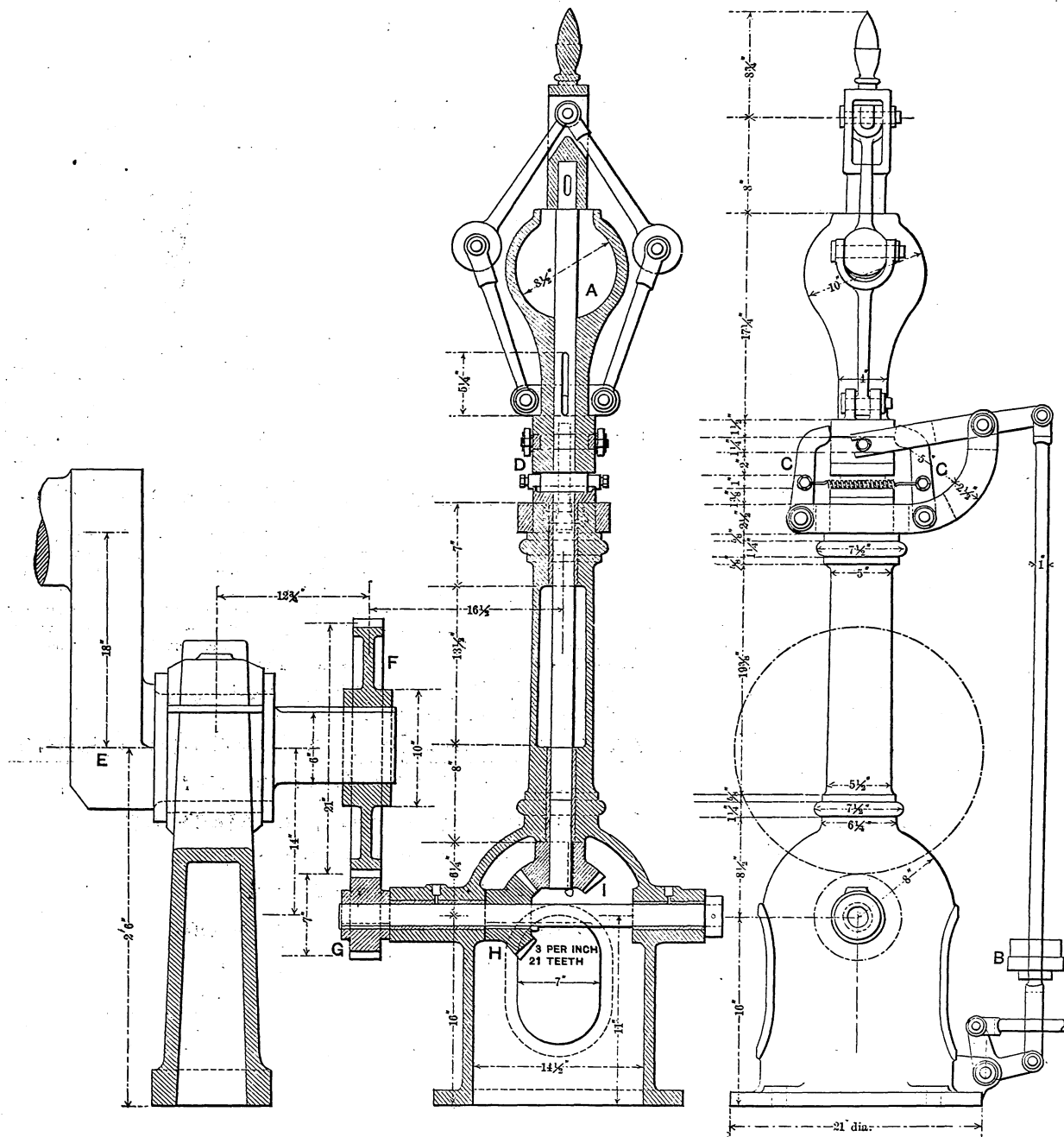
The Naylor Governor for Cross Compound Pumping Engines.

In *The Iron Age* of April 4 we illustrated and described the cross compound pumping engines designed by Ernest W. Naylor of Kemble Building,

lyn—should be maintained as nearly constant as possible in order that the best work may be done.

The governor, shown in section and elevation in the drawing, is driven from the shaft E through the gear F, pinion G and beveled gears H I. The lower arms carrying the balls are joined to

toward the spindle and to require a greater speed and therefore greater centrifugal force before the balls reach what we may term their normal position. An opposite effect is attained by placing the weights at B on the system of levers. These weights tend to lift and throw out the balls and they conse-



THE NAYLOR GOVERNOR FOR CROSS COMPOUND PUMPING ENGINES.

New York, and intended to pump against a pressure of 3000 pounds to the square inch.

We now have the privilege of presenting an engraving showing the construction of the governor provided with these engines. Since the load sometimes fluctuates very quickly, it is essential that the governor should instantly respond to these changes. This is the more important since the pressure required—hydraulic forging at the United States Projectile Works, Brook-

the sleeve D, which is formed with an annular groove to receive the pins in the ends of a forked lever which, by the system of levers shown in the right hand drawing, is connected with the steam valve.

One of the most important features in the governor is the ease with which it can be adjusted to change the speed of the engine. By placing weights (shot) in the receptacle A the speed will be increased, as the tendency of the additional weight is to pull the balls

quently reach their normal position at reduced speed.

The dogs C C are pulled toward each other by the spring shown, and are so arranged that their free ends will pass beneath the sleeve D and hold the balls in their most extended position and with the steam valve closed, if from any cause the engine should attain too great speed. The governor has been found to give the greatest satisfaction and to control the engine perfectly.

Utilizing Blast Furnace Slag.

The disposition of blast furnace slag has long been a source of considerable trouble and expense to blast furnace operators, especially to those concerns who are compelled to remove it a considerable distance from the furnace. However, if a process for the utilization of this slag, shortly to be tried at the blast furnaces of the Edgar Thomson Steel Works, at Bessemer, Pa., proves successful this trouble and expense will not only be removed, but will enable the pig iron maker to realize a profit instead. In February last the Carnegie Steel Company, Limited, placed a contract with the Roberts Mfg. Company of Pittsburgh, builders of steel link belt- ing conveying and elevating machinery of all kinds, for the construction of some elevating and conveying machinery of special design. This machinery has been completed and delivered at Bessemer, and is now awaiting a preliminary test, which will be made just as soon as some necessary changes in the railroad tracks, now under way, have been completed. With this machinery it is proposed to take the slag from Furnace D and treat it in such a manner as will make it suitable for railroad ballast, foundations, roadways and other purposes. Briefly, the process consists in taking the hot slag into a series of iron pans, from which it is conveyed to a crusher, where it is broken into cubes $1\frac{1}{2}$ inches in size. After being reduced in this manner it is taken to a horizontal pan conveyor, which delivers it to an elevator. It is then delivered to a shaking grate, which clears away all dust and dirt, after which the material is loaded on cars run under the elevator and is ready for shipment. Should the initial test prove successful, contracts will be placed for such additional machinery as may be required to treat the slag from the nine furnaces at Bessemer. The machinery now awaiting test is said to be capable of taking care of 300 tons of slag per day.

The largest check valve ever made has just been completed at the works of the Ludlow Valve Mfg. Company, Troy, N. Y., to be used in the main water supply pipe in the city of Pittsburgh, Pa. The total weight is 52,375 pounds. The valve was cast in two sections, which when bolted together made the valve stand 13 feet and 7 inches high, its greatest circumference being 32 feet 6 inches. The iron of which this valve was made when tested showed a tensile strength of 34,450 pounds per square inch. The bronze showed a strength of 39,250. The thickness of iron in this valve was $4\frac{7}{8}$ inches. Under a pressure of 500 pounds per square inch, the actual pressure on the gate plate of the valve was 3,454,325 pounds. During the recent depression in business this company have been running on full time with a full force of men.

Judge Coxe of the United States Circuit Court of Southern New York, has granted an interlocutory decree at final hearing perpetually restraining William D. Hoffman from infringing the patents 404,332, 430,058, 465,349 on magnetic separators granted to Clinton M. Ball and Sheldon Norton, the property of the Magnetic Separator Company.

At a sheriff's sale lately, in Reading, Pa., the franchises, property, &c., of the Reading, Lancaster & Baltimore Railroad were sold for \$65.

A Method of Ascertaining the Value of Iron Ore, Limestone and Coke in Blast Furnace Use.

BY R. E. CHAMBERS, FERRONA, N. S.

For the purpose of obtaining the exact value of the raw materials in the manufacture of pig iron formulae may be devised for each furnace or district which would be of great service to the furnaceman, enabling him to compare the ores, &c., at his disposal and discard those of least value.

Taking as a basis of calculation the following materials:

Ore.—Metallic iron, 50 per cent; silica, 10 per cent.; alumina, 3 per cent.; lime, 1 per cent.; magnesia, 1 per cent.

Limestone.—CaO, 53 per cent.; MgO, 1 per cent.; silica, 3 per cent.; alumina, 1 per cent.

Coke.—Carbon, 85 per cent.; ash, 15 per cent.

Ash of Coke.—Silica, 57 per cent.; alumina, 15 per cent.; lime, 2 per cent.; magnesia, 1 per cent.

We will use as a step toward obtaining the formulae the methods proposed by F. W. Gordon in a paper read at the Baltimore meeting of the American Institute of Mining Engineers.

By his methods, for a slag equal in acid and basic constituents, these materials work out as follows, taking these values as a starting point: 50 per cent. ore, \$2.50; limestone with 53 per cent. CaO, \$1; and coke with 85 per cent. carbon, \$2.50:

1. Efficiency of limestone.....0.50
2. Quantity of limestone to flux ore.....0.23
3. Weight of pure lime to flux ore.....0.11
4. Weight of limestone per unit of fuel.....0.206
5. Weight of pure lime per unit of fuel.....0.103
6. Weight of slag due to impurities of limestone.....0.084
7. Weight of slag due to impurities of limestone, per unit of efficiency.....0.168
8. Weight of slag due to impurities of fuel, per unit of fuel.....0.243
9. Weight of slag due to impurities of fuel, per unit of fuel, using CaO.....0.223
10. Weight of slag due to impurities of ore and stone, per unit of ore.....0.323
11. Weight of slag due to impurities of ore and stone, per unit of Fe_2O_30.452
12. Weight of slag due to impurities of ore and stone fluxed with CaO.....0.273
13. Weight of slag due to impurities of ore and stone, per unit of iron.....0.646
14. Carbon required per unit of slag.....0.228
15. Carbon required for fusion of pig iron.....0.6604
16. Available carbon of fuel.....0.795
17. Fuel required per unit of slag.....0.237
18. Fuel required per unit of pig iron not including fusion of slag.....0.830
19. Total fuel required per unit of pig iron.....1.01
20. Manufacturing cost of slag per unit of slag.....0.587
20. Manufacturing cost of slag per unit of iron.....0.687
21. Weight of slag to the unit of pig iron.....0.889
22. Value of pure carbon from cost of fuel and cost incurred by impurities.....\$3.613
23. Value of pure lime from cost of limestone and cost incurred by impurities.....2.24
24. Value of pure oxide of iron from cost of ore and cost incurred by impurities.....4.43
25. Cost of iron per ton.....10.24

Formula for Value of Iron Ore.—The value of pure oxide of iron being, as ascertained above for the assumed conditions, \$4.43 per ton, the value of any given ore will be proportional to its percentage of iron, less the cost of lime and carbon necessary to flux its impuri-

ties and the cost of handling the slag. If pure oxide containing 70 units of iron cost \$4.43 per ton, each unit of iron is worth $\frac{4.43}{70} = \$0.063$. From this is

to be deducted the cost of the lime necessary, or $2.24 (SiO_2 + Al_2O_3 - (CaO + MgO))$.

Also the cost of carbon, or weight of slag $\times 0.228 \times$ value of carbon.

The weight of slag will be the total impurities of the ore, plus the weight of lime necessary to flux them, minus the volatile constituents of the limestone. Value of carbon equals

$$0.228 \times 3.613 \left\{ (SiO_2 + Al_2O_3 + CaO + MgO) + 0.56 \right. \\ \left. \frac{SiO_2 + Al_2O_3 - (CaO + MgO)}{0.50} \right\}$$

Assembling into one equation:

Value of ore in cents = per cent. of Fe $\times 6.3 - 2.24 (SiO_2 + Al_2O_3 - (CaO + MgO))$

$$- 0.228 \times 3.613 \left\{ (SiO_2 + Al_2O_3 + CaO + MgO) + 0.56 \times \right. \\ \left. \frac{SiO_2 + Al_2O_3 - (CaO + MgO)}{0.50} \right\}$$

$$- 0.587 \left\{ (SiO_2 + Al_2O_3 + CaO + MgO) + 0.56 \times \right. \\ \left. \frac{SiO_2 + Al_2O_3 - (CaO + MgO)}{0.50} \right\}$$

Let $s = SiO_2 + Al_2O_3 + CaO + MgO$.

$d = SiO_2 + Al_2O_3 - (CaO + MgO)$.

e = Efficiency of limestone.

p = Per cent. of iron in ore.

Value in cents = $6.3p - 2.24d -$

$$0.824 \left(s + \frac{0.56d}{e} \right) - 0.587 \left(s + 0.56 \frac{d}{e} \right)$$

$$(Equation 1.) \text{ Value} = 6.3p - 2.24d - 1.411 \left(s + \frac{0.56d}{e} \right)$$

The constituents of iron ore not included in this equation, such as sulphur, phosphorus and titanium, have so important an influence on the quality of the product that rather than causing a variation in the value of the ore they will prohibit its use altogether for certain purposes when present in excessive amounts. They must therefore be considered separately in valuing the raw materials. Having decided on a limit for these impurities the value of the varying proportions of the others can be ascertained by these equations.

Proof.—The basis of value for iron ore upon which we started was

	Per cent.
Iron,	50
\$2.50 for an ore the composition of	Silica, 10
	Alumina, 3
	Lime, 1
	Magnesia, 1

If upon substituting these percentages in equation 1 we get this value of \$2.50, it will prove the correctness of the formula.

Value in cents = $6.3p - 2.24d - 1.411$

$$\times \left(s + \frac{0.56d}{e} \right)$$

$$= 6.3 + 50 - 2.24 \times 11 - 1.411$$

$$\times \left(15 + \frac{0.56 \times 11}{0.50} \right)$$

= \$2.519 instead of \$2.50, an error of 0.7 per cent., or less than 1 per cent., which can be explained by the small number of decimal places to which these calculations have been carried.

Value of Coke.—The value of coke will be proportional to its percentage of carbon, less the cost of lime necessary to

flux the impurities and the fuel to melt the slag and the labor of handling the slag.

The value of pure carbon being \$3.613, each unit of carbon in coke is worth \$0.9361.

Let a = Per cent. of ash.

p = Per cent. of carbon.

s = $\text{SiO}_2 + \text{Al}_2\text{O}_3 + \text{CaO} + \text{MgO}$

d = $\text{SiO}_2 + \text{Al}_2\text{O}_3 - (\text{CaO} + \text{MgO})$ of ash.

e = Efficiency of limestone.

For fluxing impurities:

The cost of lime will be $2.24 ad$

The cost of carbon will be 0.228×3.613

$$\left\{ a \left(s + 0.56 \frac{d}{e} \right) \right\}$$

The cost of handling slag will be 0.587

$$\left(a \left(s + 0.56 \frac{d}{e} \right) \right)$$

Total value in cents = per cent. of carbon $\times 3.613 - 2.24 ad - \left((0.228 \times 3.613) + 0.587 \right) \left(a \left(s + 0.56 \frac{d}{e} \right) \right)$

(Equation 2) Value = per cent. of carbon $\times 3.613 - 2.24 ad - 1.411$

$$\left(a \left(s + 0.56 \frac{d}{e} \right) \right)$$

Proof.—The coke taken as a basis of calculation analyzed:

Per cent. Per cent.
Carbon....85 and the { Silica.... 57
Ash.....15 ash... { Alumina.. 15
 { Lime.... 2
 { Magnesia. 1

and cost \$2.50 per ton.

Substituting in equation 2:

Value in cents =

$$85 \times 3.613 - 2.24 \times 0.15 \times 69 - 1.411 \times \left\{ 0.15 \left(75 + 0.56 \frac{69}{0.50} \right) \right\}$$

= \$2.517 instead of \$2.50, or an error of $\frac{1}{10}$ per cent., explainable as before.

Value of Limestone.—The value of limestone will be proportional to the percentage of pure lime it contains, less, as in coke and ore, the cost of fuel and lime to flux the impurities and the labor of handling the resulting slag. The value of pure lime having been found to be \$2.24 per ton, each unit of CaO or MgO in a limestone will be worth \$0.024. This is taking MgO to be equal to CaO , which can only be done for small percentages, it being as a flux the more powerful.

Let p = Per cent. of $\text{CaO} + \text{MgO}$.

s = $\text{SiO}_2 + \text{Al}_2\text{O}_3 + \text{CaO} + \text{MgO}$.

e = Efficiency of the limestone $\times 100$.

Value in cents = $2.24 p - 2.24 (p - e) - 0.228 \times 3.613 (s - e) - 0.587 (s - e)$

(Equation 3) Value = $2.24 e - 1.411 (s - e)$.

Proof.—The limestone taken as a basis of calculation

analyzed { CaO , 53 per cent. } and cost
 { MgO , 1 per cent. } \$1 per
 { SiO_2 , 3 per cent. } ton.
 { Al_2O_3 , 1 per cent. }

Substituting in equation 3:

Value in cents = $2.24 \times 50 - 1.411 \times (58 - 50) = \1.008 instead of \$1.00, or an error of $\frac{1}{10}$ per cent.

Having thus proved to within pretty narrow limits of accuracy the correctness of the formulae for value of ore, lime and coke we may consider them established, and proceed to use them upon the materials daily presenting themselves for consideration.

For any other set of conditions or for any other type of slag the items, but not the method of calculation, would be changed.

Once having the formula, it is only a matter of a minute or two to ascertain the required value of any material.

The convenience of this will be readily appreciated by furnacemen.

One or two points in connection with the following table require notice.

In ore No. 15 the basic constituents being in excess of the acid ones d becomes minus, thus changing the deductions into additions. This would hold good only when a carbonate ore of this class was used in small proportions. If used in large quantities the altered conditions would require a new formula.

In ore No. 33 the percentage of iron is so low, and of silica so high, that the value becomes a minus quantity, being \$1.61 less than nothing, or the ore would cause a loss of that amount for every ton used.

This also holds good in coke No. 5, where the heating qualities of the carbon are more than taken up by the fluxing of the slag resulting from the impurities of this fuel. From the table the great importance of the purity of the raw materials for blast furnace work can be seen at a glance.

Table of Values of Ore, Coke and Limestone, as Determined from the Analysis.

ORE.

$$\text{Value} = 6.3 p - 2.24 d - 1.41 \left(s + 0.56 \frac{d}{e} \right)$$

Number.	Analysis.						Value.
	Silica. Per cent.	Alumina. Per cent.	Lime. Per cent.	Magnesia. Per cent.	Iron. Per cent.		
1.....	1.3	0.4	0.5	0.0	68.23	\$1.24	
2.....	0.8	0.4	0.1	0.1	67	4.17	
3.....	6.1	0.0	0.0	0.0	85.5	3.81	
4.....	6.0	1	2	1	61.3	3.61	
5.....	4	1	3	1	59.2	3.54	
6.....	3.3	1	2	0	58.8	3.52	
7.....	7.1	2.3	1.9	0	61.6	3.44	
8.....	3.7	1.4	0.2	0	58.3	3.41	
9.....	5.8	1.0	0.3	0	57.7	3.28	
10.....	10.7	1	3.2	2	58.1	3.17	
11.....	4	10.9	1.9	0	58.5	2.95	
12.....	10.1	2	2	0	56.0	2.94	
13.....	7.3	6.3	0.4	0	55.6	2.80	
14.....	7.4	3	0	0	53.0	2.79	
15.....	1.7	0.0	2.3	2.1	39.6	2.67	
16.....	5.5	0.0	12.7	2.1	39.1	2.57	
17.....	12	4	2	0	52.0	2.49	
18.....	18.1	3	5	1	53.2	2.39	
19.....	15	0	1	0	49.5	2.36	
20.....	12.6	2	2	0	45.0	2.18	
21.....	18.1	3.5	2.3	1.0	50.2	2.11	
22.....	16	3	2	0	47	2.02	
23.....	19.8	0	2	0	45.2	1.86	
24.....	22.7	5.8	0	0.3	48.5	1.53	
25.....	24.5	3	3.5	1.7	44.9	1.53	
26.....	23.4	0	2	0	41.8	1.46	
27.....	26.5	5	1	0	47.5	1.37	
28.....	16.1	12.9	3	0	41.0	1.26	
29.....	25.6	0	3	0	36.1	1.00	
30.....	30	4	9	1	40.0	.99	
31.....	27.3	9.4	1.2	0	42.0	.70	
32.....	25	6.7	0.1	0.1	36.0	.61	
33.....	58.7	2	1	0	4.4	-1.61	

COKE.

$$\text{Value} = 3.613 \times \text{per cent. of } c - 2.24 ad - 1.41 \left(\left(s + 0.56 \frac{d}{e} \right) a \right)$$

Number.	Analysis.						Value.
	Carbon. Per cent.	Ash. Per cent.	Of ash.				
			Silica. Per cent.	Alumina. Per cent.	Lime. Per cent	Magnesia. Per cent.	
1...	97.1	2.9	57	15	2	1	\$1.40
2...	89.6	10.3	57	15	1	1	2.86
3...	85	15	57	15	2	1	2.52
4...	80.9	19.1	57	15	2	1	2.23
5...	45.6	54.3	57	15	2	1	-.35

LIMESTONE.

$$\text{Value} = 2.24 e - 1.41 (s - e)$$

Number.	Analysis.				Value.
	CaO. Per cent.	MgO. Per cent.	Silica. Per cent.	Alumina. Per cent.	
1.....	53.9	1	1.5	1.0	\$1.10
2.....	32.8	0.8	2	1.3	1.63
3.....	53.0	0	3	0.5	1.01
4.....	51	1	5.3	1.6	.81
5.....	52.7	2	2.7	1.7	.86
6.....	53.5	0.8	2.4	0.5	1.07
7.....	45.5	1.5	13.5	1.5	.29

The summer meeting of the American Society of Mechanical Engineers will be held at Montreal, Canada, June 5 to 8, the opening session to be held on Tuesday evening, June 5. The headquarters will be at the Windsor Hotel, and professional sessions will be held at the Engineering Building of McGill University. Excursions have been arranged down the Lachine Rapids to the Lachine Canal, to Ottawa, and to various points of engineering interest about Montreal. The papers announced for the sessions are as follows: A. K. Mansfield, "Notes on the Theory of Shaft Governors;" Albert F. Hall, "Heat Units and the Specifications for Pumping Engines;" W. H. Bristol, "A New Recording Pressure Gauge for Extremely High Ranges of Pressure;" Frank Richards, "A Note on Compressed Air;" A. W. Robinson, "The Relation of the Drawing Office to the Shop in Manufacturing;" R. H. Thurston, "The Theory of the Steam Jacket; Current Practice;" D. S. Jacobus, "Results of Experiments with a 50 Horse-Power Single Non Condensing Ball & Wood Engine to Determine the Influence of Compression on Water Consumption;" Frank H. Ball, "Cylinder Proportions for Compound Engines, Determined by Their Free Expansion Losses;" F. M. Rites, "A New Method of Compound Steam Distribution;" Jesse M. Smith, "Tests of a Small Electric Railway Plant;" W. S. Aldrich, "Power Losses in the Transmissive Machinery of Central Stations;" M. P. Wood, "Rustless Coatings for Iron and Steel;" Jas. McBride, "Corrosion of Steam Drums;" C. W. Hunt, "A New Mechanical Fluid;" F. R. Hutton, "First Stationary Engines in America;" DeCourcy May, "Cost of an Indicated Horse-Power;" Jao. R. Freeman, "A New Form of Canal Waste Weir;" G. W. Bissell, "Effect of Varying the Weight of the Regenerator in a Hot Air Engine;" W. R. Roney, "Mechanical Draft for Boilers;" R. C. Carpenter, "The Saturation Curve as a Reference Line for Indicator Diagrams;" Denton Jacobus-Rice, "Results of Measurement of the Water Consumption of an Unjacketed 1600 Horse-Power Compound Harris-Corliss Engine;" F. B. King, "Notes on the Corrosion of a Cast Steel Propeller Blade."

One of the largest iron railroad tunnels in Great Britain has just been completed near Glasgow. It is the Mound North tunnel of the North British Railroad line. The new tunnel is a tube of cast iron 17 feet 6 inches in diameter, composed of segments 4 feet long and 18 inches in breadth, bolted together through flanges 7 inches deep and 1½ inches thick.

The Sprague Pratt Electric Elevators.

We are indebted to the kind courtesy of our contemporary, the *Electrical Engineer*, for the following illustrated description of elevators recently installed in the Postal Telegraph Building, New York, by the Sprague Electric Elevator Company of 253 Broadway, New York. The article from which this is taken covers very thoroughly the entire electrical equipment of this building. The requirements and guarantees were, in brief, to duplicate first-class hydraulic service in speed, control, safety and capacity, to improve upon some of its characteristics and to occupy less space. It was further promised that the cost of operation would not exceed one-half that of a corresponding hydraulic plant. In short, the issue was made in the broadest possible manner between the

elevators for the Postal Telegraph and Commercial Cable offices, operating room and restaurant. This set is placed in the rear of one pair of way elevators and separated from them by the main stairs. All cars have independent platforms fitted with centrifugal governors set to be operated at 600-foot car speed by standing ropes. The car finishes are of ornamental bronze of the usual type. The way cars are one-fifth larger than the express and have four hoisting and two counterweight ropes, while the latter have two hoisting ropes less. The required loads are directly, and the speeds inversely, proportional to the

ing ropes lead directly to the outboard sheaves of the hoisting machines in the sub-basement and dividing on either side of the cross head, pass around the sheaves, 10 geared for the way and 12 geared for the express, and are anchored to the head of the machines. So far, with the exception of the control, the practice is that of the horizontal hydraulic elevator.

Coming now to the machines in the basement, the distinguishing features of the electric plant become pronounced, and first, and by no means the least important, is the space occupied; for here, on account of the peculiar

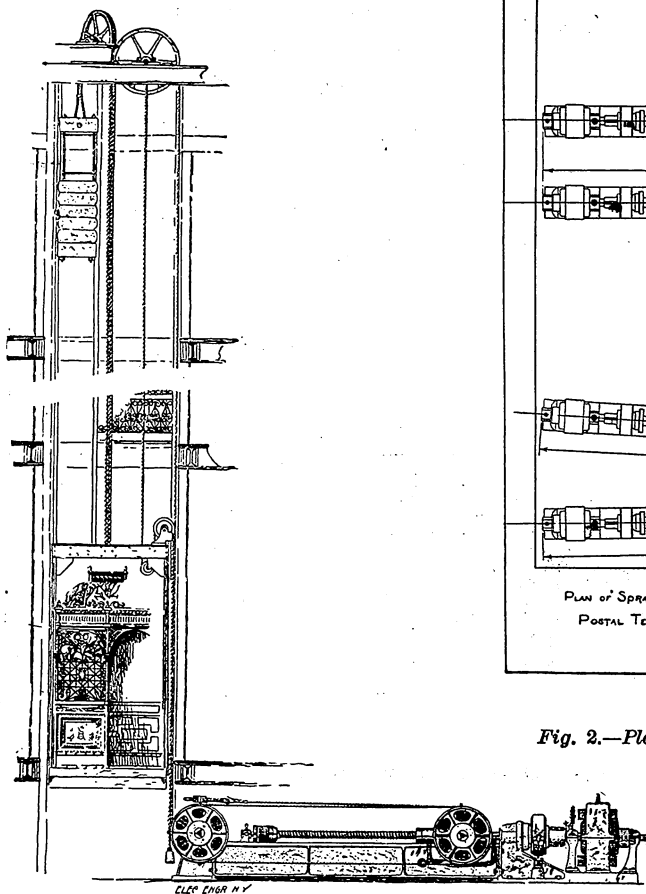


Fig. 1.—Electric Elevator in Postal Telegraph Building.

THE SPRAGUE-PRATT ELECTRIC ELEVATORS.

hydraulic and the electric elevator for the highest class of service. The result was shown in the letter accepting the plant, written after weeks of the severest sort of duty, with open and closed cars on freight and passenger service, carrying loads as high as 3500 pounds and under conditions taxing the operation of a machine to the utmost.

The elevators are divided into three groups, or pairs, two sets being "way" elevators, stopping at all floors excepting the twelfth and thirteenth and arranged with one general frontage, a gangway in the middle and the main stairs winding around one set. The remaining set constitutes the express elevators, and stop only at and above the eleventh floor, being practically private

floor areas, those for the way cars being 2400 pounds live load at 325 feet and for the express cars 2000 pounds at about 400 feet. The speeds running light are about 10 per cent. higher. These are the present normal speeds, but the motors have been found to be of such abundant capacity that the speeds can be increased to 450 feet for the way and from 575 to 600 feet for the express without difficulty or straining.

The shaft and overhead work is identically the same as in first class hydraulic plants, and variable chain counterweights are used to make the pull equal at all points of the hoistway for any given carload. The lower landing is at the street level, with pit extending into the basement. The hoist-

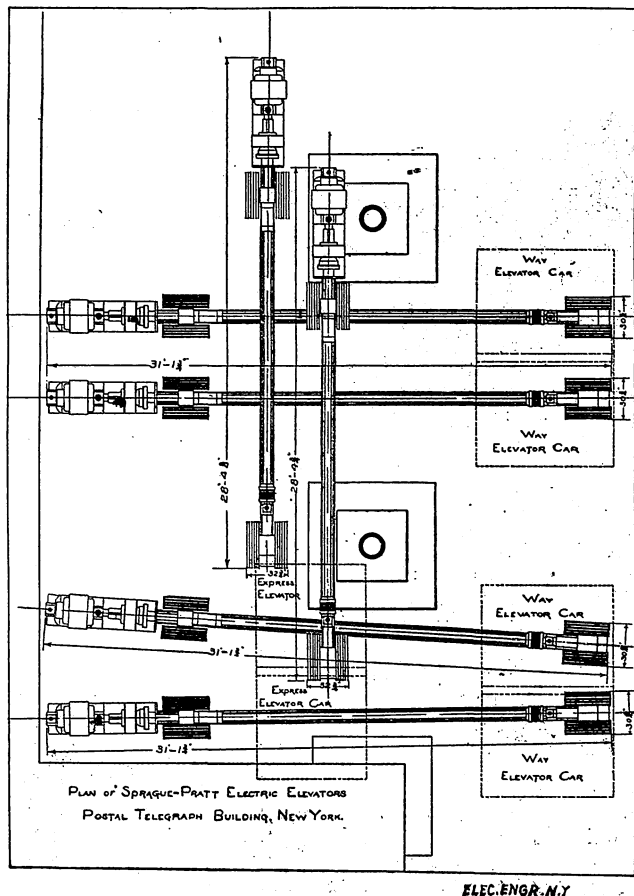


Fig. 2.—Plan of Four Way and Two Express Elevators.

disposition of the cars and the position of the foundations and the party wall, six machines, two at right angles and above the other two, are placed in a space about 30 feet square, with ample room for at least eight more machines, all self contained, each perfectly independent and with every facility of access and for renewal of any part. Briefly described, the machine is of the horizontal multiple sheave type, with a traveling cross head and frictionless nut driven by a screw revolved by a motor directly connected and governed by a pilot motor and rheostat.

A reference to the elevation, Fig. 5, will show the general mechanical construction. This consists of a heavy main beam carrying the traveling cross head and lower screw bearing, with special castings bolted at each end, one carrying the fixed set of sheaves and the other the thrust bearing, brake and motor. The regulating apparatus is independent and self contained, and is placed on the wall. From the car to the system of multiplying sheaves this machine and the horizontal hydraulic elevator are practically the same. The cross head, however, marks the point of departure in the two types, and this is

the one at which the troubles of the hydraulic elevator begin, and also the one from which the Sprague-Pratt electric elevator marks its evolution in elevator practice.

In the hydraulic machine this cross head is rigidly attached to the end of a rod terminating in a piston moving in a cylinder having an inside length equal to the lineal movement of the cross head. This cylinder in the vertical type of hydraulics varies from 30 to 45 feet in length with from 2 to 8 sheave multiplications, and in the horizontal types the multiplication runs as high as 12, with corresponding diminution of length of cylinder and increase in cross section. Whatever the gearing, however, the length of cylinder is a function of the car travel. In this electric ele-

nut and the cross head, the continual weight of the car always keeping them in contact, and the friction at this point being greater than between the nut and the screw enables the latter to transmit a straight line movement to the cross head when the screw is revolved by the motor, and also to revolve the screw and drive the motor as a dynamo when the mechanical brake releases the screw to allow the car to descend. These are the normal functions of hoisting and lowering.

To continue the line of transmission of power, it will be seen by Fig. 4 that the only points of contact between the nut and screw are by a chain of balls which occupy 12 threads and are shown entering and leaving the ends of the nut through a tube, which takes the

and to settle once for all any doubt as to their ability to stand the duty required of them. Ten balls of two different makes were put under crushing strains, and required from 20,000 to 40,000 pounds to break each of them. Since the working pressure varies from 50 to 125 pounds per ball, there would seem to be margin enough to satisfy the most exacting.

The nut system is a compound one, for besides the working ball nut there is another, called the safety nut, keyed to it, and between the two is a powerful spring under compression.

The screw is a specially forged bar of high carbon steel with a peculiarly shaped thread. It passes through the clearance hole in the steel trunnion cross head which carries

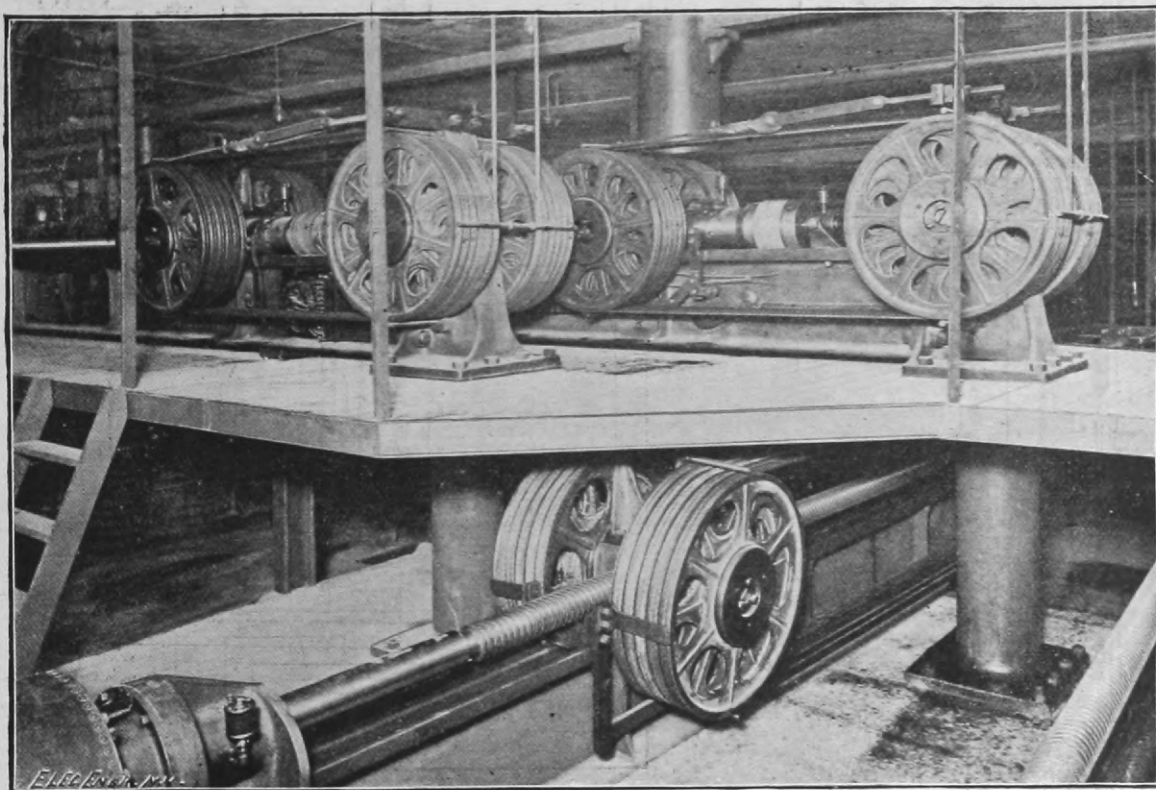


Fig. 3.—Fixed and Movable Sheaves of Express Elevators, and Screw and Movable Sheaves of One Way Elevator.

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vator, the cross head being moved along a screw stationary so far as lineal movement is concerned, there is with any given number of sheaves only one variable, the length of screw, and for all heights above about 90 feet the electric machine has an advantage in matter of length, which with increased rises becomes of great importance.

Turning now to the operation of this machine, there are four features claiming special attention, each unique in character and marking a radical departure from all other elevator practice. These are the nut, screw and bearing, the brake, the motor and the regulating apparatus.

The hoisting nut being the first step in order, its connection with the traveling sheaves is the first thing to consider. Fig. 4 shows the nut pointing in the opposite direction from that shown in Fig. 5. It will be seen, however, that it joins the cross head of the traveling sheaves by a conical seat. There is no fastening between the

balls as they leave one end and returns them to the other end at a tangent to the line of travel between the threads of nut and screw. This is one of the most vital points of the elevator apparatus, and herein lies one of the most potent reasons of its success, the reduction of friction by rolling instead of sliding surfaces on almost all parts under pressure; for not only is the nut so constituted, being in fact a developed spiral thrust bearing, but the thrust bearing at the motor end of the screw is taken on balls and the sheaves are carried on ball or roller bearings.

So free is this machine from static friction that it is possible to start the car with a very slight increase of current over the normal hoisting current, provided time be taken so that the work done in acceleration is small compared to the work of lifting.

A test was recently made on a Fairbanks testing machine in New York to determine the liability of balls crushing under normal or extra working strain.

the traveling sheaves, then through the nut system, and is carried at the outer end by a pivoted bearing. At the inboard end it terminates in the thrust bearing, where the pressure is taken by about 220 steel balls carried in a bronze guide plate and bearing on specially hardened steel disks. The thrust of the screw being thus taken up on the inboard end, the strain on the screw is invariably between that end and the traveling cross head, never beyond this; hence it is always under extension strain, never under compression.

Beyond the thrust plates is keyed a radially lagged iron and wooden pulley connected by a flexible coupling with the motor shaft. The function of the brake is that of locking the screw when at rest, and is not a means of varying the speed. In case of accident it has the additional function of helping to stop the screw. It may be described as a compound electro mechanical brake. The brake band, of steel, and leather

lined, is anchored at one end, the hoisting side, on the motor bed frame, and the other end is continually pulled down by a powerful spring under compression. The mechanical movement in opposition is through the medium of a lever fulcrumed on a peculiar magnet casting and having at its short arm end a universal socket connection to the divided core of a closed circuit steel magnet. This core has a movement of $\frac{1}{4}$ inch, and with the expenditure of $\frac{1}{4}$ horsepower of electric energy has a pull of nearly $\frac{1}{2}$ ton. It is operated by a dual circuit, one in hoisting, another in lowering, each possessing peculiarities in its action. In the event of failure of current for any reason or too high a speed on the down run, this magnet releases the brake, in the latter case by a snap switch operated by a Pickering centrifugal governor driven by the main screw, and the brake band promptly grips the brake wheel softly, yet powerfully. The operation of the brake on the up and down movements is different, and the unexpected softness, yet power, of its action can only be appreciated and understood by an inspection and a further knowledge of a unique electrical action not here described.

The care and attention required by an elevator of this type, as compared with the hydraulic plant, is in its favor, for aside from the ball bearing nut there are no more parts to attend to and renew than there are in an ordinary electric elevator. The thread of the nut is hardened by a special process that ren-

can be removed without disturbing any other part of the machine. There are four nests of sheaves on each elevator and any nest can be exchanged for a spare nest within five minutes after the ropes are slacked. It would take five hours to do this on a hydraulic elevator, as it would be necessary nearly to dismantle the whole machine to get at them. The Sprague-Pratt machine can be absolutely dismantled and practically every working part laid on the floor in an hour and a half.

Our contemporary describes the purely electrical features of the plant—the motor, rheostat, safety devices, &c.—in the most comprehensive way.

Double Head Face Milling Machine.

Beaman & Smith of Providence, R. I., have recently built a double head face milling machine, made up principally of two beds about 14 feet long, placed about 12 feet from center to center. Their position is

been previously adjusted. The plates are fastened by the ordinary clamp girder, such as is used in plate shearing machines and machines of that character. After the two edges are milled the plates are unclamped and by hydraulic lift are placed centrally under the machine. The plates are lifted, turned quarter way around on the turn table, resting on $\frac{1}{4}$ -inch hardened steel balls. The plate is then lowered into position and the remaining edges are milled.

The machine occupies a floor space of 18 feet by 22 feet. The feeds are arranged with automatic stops, and are designed in such a way that the feed and quick movement cannot be thrown in at the same time. The machine weighs, when completed, about 50,000 pounds. It is calculated to have power sufficient to drive the cutter tools all that they will stand. The gearing, screws and shafts, in fact all the details, are large and have every appearance of being capable of performing their share of duty. Beaman & Smith make a

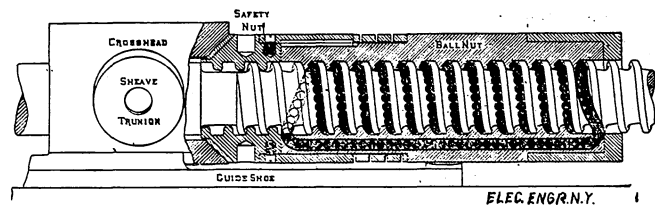


Fig. 4.—Section through Ball Nut.

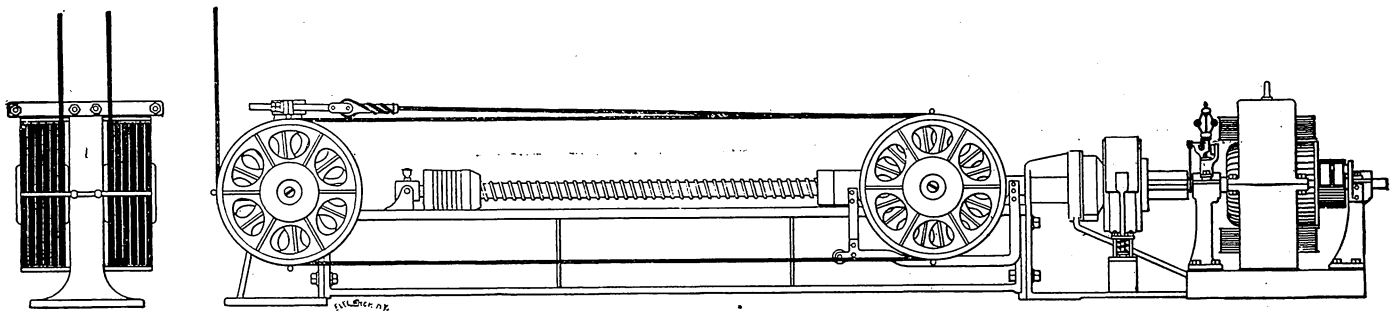


Fig. 5.—End and Side Elevation of Elevator.

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ders it for a depth of $\frac{1}{4}$ inch as hard as steel can possibly be made. The thread is afterward ground true and smooth. Tubes are then inserted to circulate the balls from one end to the other. The balls are $\frac{1}{4}$ inch in diameter and of standard make. The load per ball is not over 100 pounds maximum.

One of these nuts has run for 24 hours per day for 16 months, and was only removed twice in that time for inspection. The operating nuts of the Postal Telegraph plant, although at times under vicious duty, show no wear of the working thread. As illustrating the facility of access, a car can be slung by its ropes from below, the end screw bearing, the buffer nut, the working nut all removed, the balls taken out and inspected, the nut cleaned, and the whole restored and car put into operation again within 30 minutes. The balls in the nut can be inspected while the machine is in operation.

The multiplying sheaves run on bearings, which show no wear at all and do not require oiling or cleaning more than once a year. Not a drop of oil runs out of them. Hydraulic engineers will appreciate this, and also the fact that any or all sheaves on this elevator

maintained by suitable bracing. On these beds there are two platens about 16 feet long, which carry the saddles holding the spindle head and cutters. The saddles have a movement on the platens of about 11 feet. The platens have a movement on the bed of about $4\frac{1}{2}$ feet each, which is for adjustment for work between cutters. The cutters are 14 inches in diameter, and the maximum thickness of work to be milled is 10 inches. The spindles carrying cutters are $6\frac{1}{2}$ inches in diameter, are made of hammered steel and are driven by a 4-inch belt, geared to the ratio of 54 to 1. It is geared up for positive feed, which is from 1 inch to 12 inches per minute. There is a quick movement for the spindle head in either direction as required, and also a power movement for the platens. Each spindle is driven through its own mechanism, making it possible to use but one side of the machine at one time, if so desired. Suitable provision is made for lubricating the cutters while at work and returning the lubricant to a common receptacle.

In operation, the plates to be milled are placed with their edges resting on the platens in position for the cutters, the distance between the platens having

specialty of designing milling and boring machines to suit special requirements where the maximum amount of production is demanded.

The average number of working days in various countries is as follows: In Russia, 267; in England, 278; in Spain, 290; in Austria, 295; in Italy, 298; in Bavaria and Belgium, 300; in Saxony and France, 302; in Denmark, Norway and Switzerland, 303; in Prussia, 305; in Holland and North America, 308, and in Hungary, 312. One conclusion, at least, can be drawn from these figures, remarks *Engineering* of London—viz., that the number of working days of a country has nothing to do with its national wealth.

Arrangements are being made for holding an international electrical exhibition in Paris in 1895, to be open from July 1 until October 31 of that year.

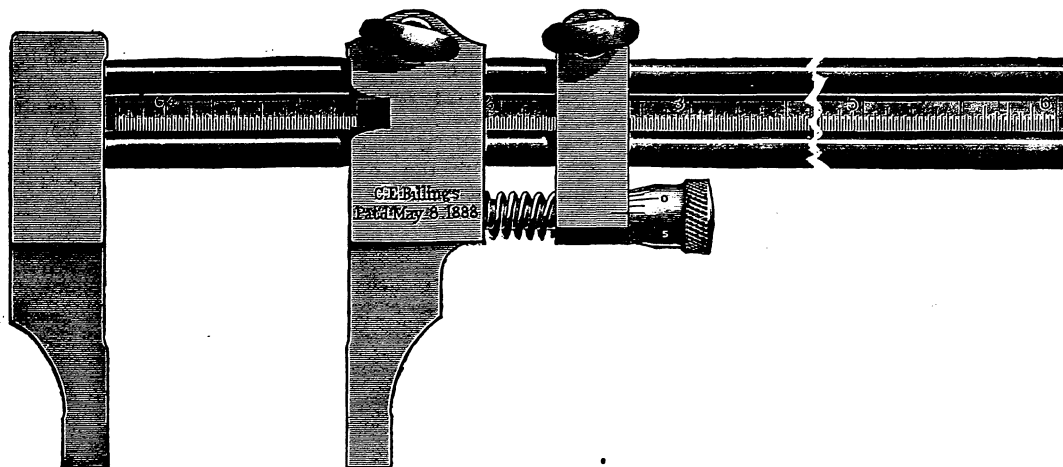
The production of fine gold in the Witwatersrandt region and other localities in South Africa during 1893 is estimated, according to the latest returns, at \$28,000,000 in value, which is somewhat less than was previously estimated.

The Billings Beam Caliper With Micrometer Adjustment.

The construction of this instrument and the advantages possessed by it will be apparent by a glance at the accom-

pletion. In a few months it is calculated that 44 tons of copper will be turned out daily from the works, besides the gold and silver contained in the ores. The great Allis engine from Machinery Hall, in the Columbian Exposition, is, it is reported, now being

movement allows the air pressure to be maintained at a minimum pressure, and saves power, wear and tear on compressor, cost of operating, &c. The machine occupies but little space and can be located wherever a belt can be run to it. The large cylinder is used



THE BILLINGS BEAM CALIPER WITH MICROMETER ADJUSTMENT.

panying engraving, which shows its full size with a part of the bar removed. The tool is the same construction as that made for some time by the Billings & Spencer Company of Hartford, Conn., except that it has thin jaws to permit its use for both outside and inside measuring, and is also provided with a micrometer adjustment, the arrangement of which is plainly shown in the cut.

The annual report of the National Board of Fire Underwriters shows that the year 1893 was one of unexampled adversity to the fire insurance companies of the United States. According to careful estimates prepared by the board, the loss of property by fire last year throughout the country reached the enormous sum of \$167,000,000, an increase of \$16,000,000 over the total given for 1892. In his annual address last week President Skilton of the National Board summed up the year's results in these terms: "Years there have been that have recorded greater single conflagrations, but for widespread and continuous disaster the year 1893 stands clear and well outlined from all that have gone before. The Connecticut Insurance Commissioner said that instead of any profit in 1893 to the companies, taken all together, there was a loss of over \$8,000,000. In 1892 there was a profit of over \$4,000,000. The results of the two years differ by more than \$12,000,000. Figures compiled from the last annual statements of 36 New York State companies, 56 companies of other States and 19 foreign companies show a reduction of over \$8,000,000 in their aggregate net surplus, as compared with one year previous, and of nearly \$14,000,000 as compared with January 1, 1891." It is not to be wondered at that the fire insurance companies, in viewing these alarming losses, are urging the necessity of enforcing more stringent and uniform rules and methods.

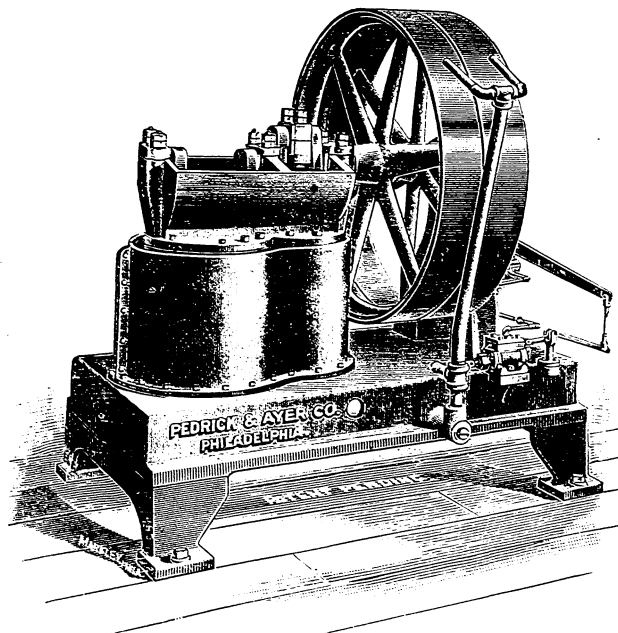
The Denver, Col., *Times* states that the new plant which is being erected by Posey, Green & Co., at Salt Lake City, Utah, for the reduction and refining of copper, is rapidly progressing to com-

set up to run the electric works at the copper plant.

Automatic Compound Belt Air Compressor.

This air compressor was designed by the Pedrick & Ayer Company of 1001 Hamilton street, Philadelphia, to fill the want for a machine that would re-

only for a gathering cylinder. It discharges its contents of free air into the small or compressing cylinder, which, being a little less than one-quarter of the area of the large cylinder, admits of compressing from the beginning of the downward stroke, thereby greatly increasing the capacity. The gathering cylinder is 11 inches in diameter, and the other 6 inches. The cranks are arranged opposite each other, thereby



AUTOMATIC COMPOUND BELT AIR COMPRESSOR.

quire but little attention—in fact be capable of running itself. This compressor is equipped with an automatic belt shifter, which, when the machine has pumped up to any desired pressure, shifts the belt, automatically, over to the loose pulley, and stays there until the pressure has fallen a few pounds, when the belt is shifted on to the tight pulley again, and the compressor again begins pumping. This automatic

making the machine quiet in running and well balanced. The valves are of the ordinary gravity kind and are easy of access in case repairs are needed. The cylinders are incased in a water jacket, but they can be used for a pressure of from 80 to 90 pounds per square inch without its use, although better results are obtained by employing it. The machine has a capacity of about 32 cubic feet of free air per minute, al-

though this can be increased when desired. It requires about 5 or 6 horsepower to run it. It is provided with sight feed oil cups that will run 12 hours without replenishing.

Twenty-four-Inch Engine Lathe.

This tool was designed with the object of producing the greatest amount of work in a given time, and with all the accuracy desired. The head stock is very massive, is fitted with bronze bearings and crucible spindle of large diameter, and it is made hollow, either for the purpose of driving out the center or for passing the stock through. It has a five step cone for 3 inch belt; it is powerfully back geared, and has the gearing for cutting screws direct, as well as the feed cone for operating the carriage. The tail stock is heavier than usual, and is fitted with a spindle

inch to engage, and push back 1 inch to disengage. There is also provided an eccentric clamp which is shown to the right of the cross feed crank. By simply moving this crank downward it locks the carriage firmly while the cross feed is at work. It will be noticed that a change of feed, in addition to the three-step cone, may be had by the gearing shown in connection with the feed cone, so that either very fine or very coarse feeds may be obtained independent of the lead screw. The bracket to which these gears are fitted swivels on a pivot to which it may be tightened, and is intended to keep the feed belt just tight enough to carry the feed properly. The main dimensions of this lathe, which is built by Dietz, Schumacher & Co. of Cincinnati, Ohio, are: Front bearings, $3\frac{1}{2}$ inches diameter, $5\frac{1}{2}$ inches long; back bearing, $2\frac{1}{2}$ inches diameter, $4\frac{1}{2}$ inches long; nose on spindle, $2\frac{1}{2}$ inches diameter; hole in

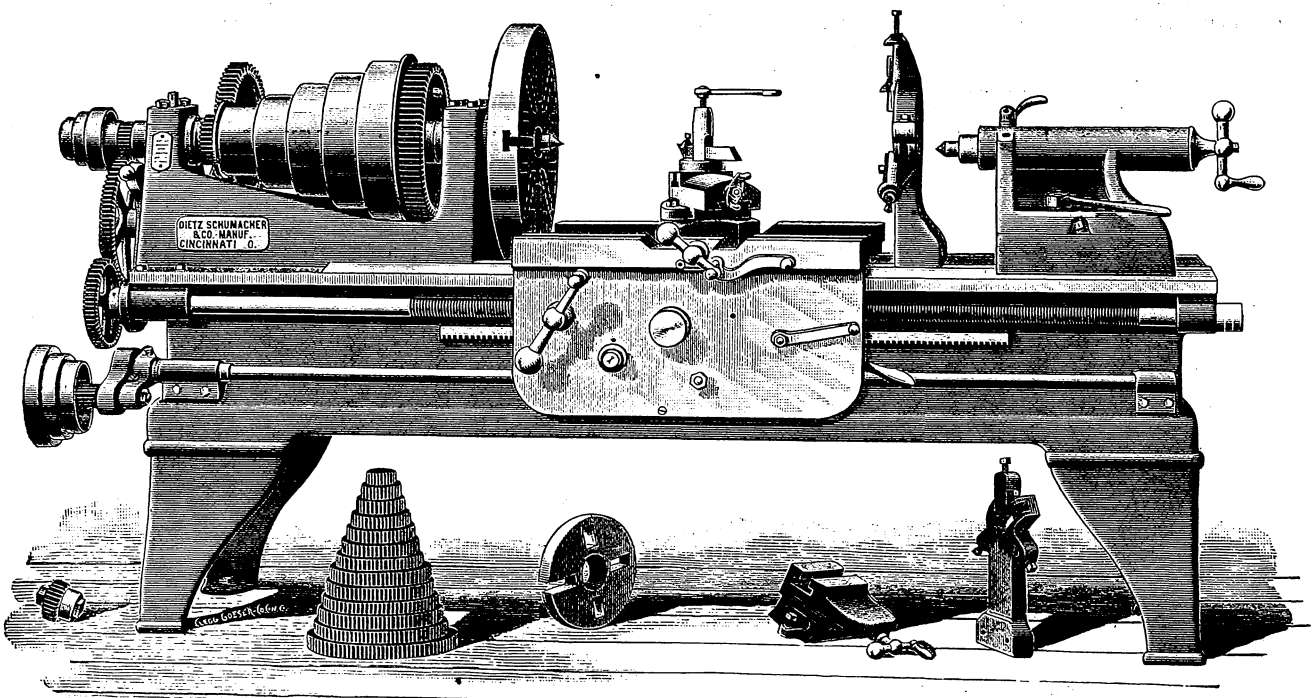
Canadian Notes.

The Pictou Charcoal Iron Company, New Glasgow, N. S., held their annual meeting last week and elected the following: James D. McGregor, president; A. D. Macdonald, secretary-treasurer; H. M. Fitzpatrick, W. B. Moore and J. B. Foster, directors.

New buildings for the manufacture of hollow ware are being completed by Clendinning & Sons, Montreal, at St. Henri, a suburb of that city. They cost \$100,000.

S. R. Foster & Son, St. John, N. B., have added seven new cut nail machines to their plant.

The Hardware Association of Montreal made some excellent suggestions to the government in regard to the grouping of hardware articles in the



TWENTY-FOUR-INCH ENGINE LATHE.

for long length of travel and is provided with a tightener for taking up wear. As will be noticed, the carriage is of much greater length and depth than usual, being carried a little above the V's upon which the tool block moves, in order that the T seats may be of unusual strength. In attaching the apron to the carriage a groove is planed in the solid part of the carriage in order to receive the apron, making it as near a part of it as possible, so as not to depend on screws for holding the apron of the carriage, as is usually done. A number of special features have been incorporated in the construction in order to overcome difficulties that are more or less common in engine lathes.

For instance, the reverse movement for carrying the feed in either direction is in the apron, and when the feed is engaged mechanism has been provided so that the half nuts cannot be engaged until the feed is disengaged. Neither can the feed be engaged by any possibility while the machine is cutting screws. The cross feed is a very simple matter to engage and disengage, consisting simply in pulling a button forward 1

spindle, $1\frac{1}{2}$ inches diameter; centers conform to Morse taper, No. 4; swings over ways, 24 inches; swings over carriage, 15 inches; distance between centers, 4 feet. This lathe will cut threads from 3 to 16 inclusive, including $11\frac{1}{2}$ -inch pipe thread.

Tests of a new invention, known as the enameling process for steam boilers, are shortly to be carried out by a board of engineer experts at the Brooklyn Navy Yard. The new method, it is claimed, will obviate the frequent troubles arising from incrustation and corrosion in boilers. It consists in the coating of the inner surfaces with a deposit in the form of a smooth, extremely thin black enamel. This enamel, it is asserted, is not attacked by acids.

The testing of 6-pounder rapid fire rifled guns of various patterns was begun at the Sandy Hook proving grounds last week by a committee from the Ordnance Department. The guns in the competition are of the Hotchkiss, Maxim-Nordenfolt, Seabury, Sponasal and Driggs Schroeder types.

tariff. They recommended a convenient classification which they submitted. If this should not be adopted, they asked that each article in the hardware list should be specifically named, with the duty placed after it in the tariff. This, or some such arrangement, is necessary to secure uniformity of appraisement at different ports of entry.

The effects of the coal strike are felt on this side of the line. In Toronto the supply of soft coal has run into narrow compass. The McDonnell Rolling Mills talk of shutting down. In Hamilton the Ontario Rolling Mills have shut down because of the lack of coal. Cape Breton coal may have to be brought up, though it costs \$1 to \$1.25 more laid down in Ontario than the American does.

The London Machine & Tool Company and the Geo. F. Blake Mfg. Company, Boston, Mass., have the contract for supplying new water pumps to the London water works. The price is \$17,616.

James Pender & Co., Limited, manufacturers of cut nails, St. John, N. B., held a meeting the other day and

elected W. H. Murray president, in place of Wm. Wheeler, resigned, and Eben Perkins to Mr. Murray's place on the board.

United States bar iron has been imported since the duty was lowered. The price was \$1 per 100 pounds at Pittsburgh. Bar steel, at \$1.05 to \$1.10, has also been brought in from Pittsburgh. These imports have softened home prices.

John Ballantyne, formerly foreman of the Cowan Mfg. Company, Galt, Ontario, has made arrangements to start a factory at Preston to make wood working machinery.

The low prices quoted for American pig iron make it more than ever difficult for Canadian irons to get as far as Toronto from the east. One Toronto firm is known to have placed an order on the other side of the line for a 2500-ton lot.

Wholesale merchants take exception to some of the items of the free list

division, the arrangement to be retro-active, dating from May 1. The railroad attorneys believe that the anti-pooling section of the Interstate Commerce law does not prohibit the formation of such a pool, and it is understood that the Interstate Commissioners will not interpose any objections to the new arrangement. Meanwhile Western freight rates continue to be seriously cut.

The Reading Wood Pulley.

The Reading Wood Pulley Company of Reading, Pa., are putting on the market the wood pulleys here illustrated and which are made under the Fiester patents. In construction the pulley consists of a spider made of ash, so framed as to present but small surface to the wind and having an iron hub with a removable section of wedge shape to grip the shaft, the same being further reinforced by a set screw in the top, thus making a positive clamp. The

touching the waters of the Atlantic, furnished a good illustration of the value of inland waterways for the transfer of war vessels from one point on the coast to another in time of war. The "Cushing" started down the Potomac River to Chesapeake Bay, proceeded up to Chesapeake City and thence crossed by the canal to the Delaware River, continued north to the Delaware and Raritan Canal, and by way of the Raritan River and Bay entered New York waters. She carried weight equivalent to her full equipment in time of war.

The Philadelphia & Reading Railroad shops at Reading, Pa., have just turned out a monster steam whistle which, it is calculated, can be heard at a distance of 30 miles. The whistle is made of brass and is 3 feet long. It is intended for the power house at the Gordon Planes, Schuylkill County, Pa., its use being to obviate the necessity of the employees of the road traveling a long

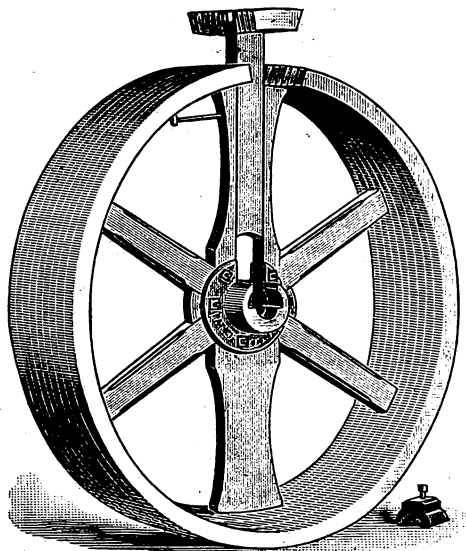


Fig. 1.—Large Size.

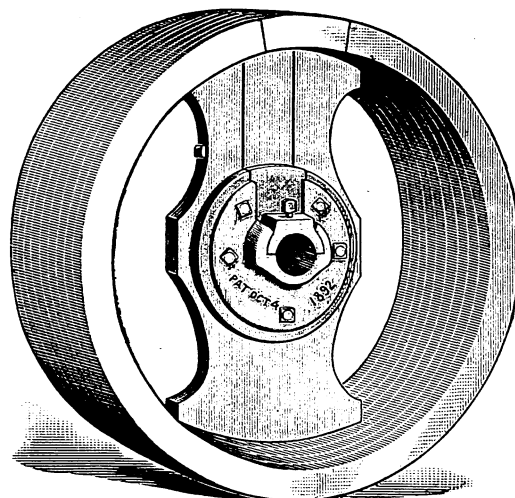


Fig. 2.—Small Size.

THE READING WOOD PULLEY.

which are in the special interest of manufacturers. Certain classes of wire, for example, are admitted free when they are to be consumed in manufacture by the person or company importing them; otherwise they bear a duty. It is pointed out that under these clauses a considerable quantity of stock is imported under the cover of manufacturers' orders, when it is intended for merchants or small consumers. This, of course, is hurtful to the trade of wholesalers.

The mineral production of Canada for 1893 amounted to \$19,250,000, a quarter of a million less than for 1892.

An eastbound freight pool has been signed by the presidents of the principal eastward railroad lines in Chicago. Ten lines are members of the pool, namely, the Lake Shore, Michigan Central, Fort Wayne and Panhandle lines of the Pennsylvania system; Chicago & Grand Trunk, Chicago & Erie, Baltimore & Ohio, Wabash, Nickel Plate and Big Four. The Erie system, which is in the hands of a receiver, is not in the pool, but the Chicago & Erie is. The lines agreed on an even 10 per cent.

hub is bored out and fastened to the spider by bolts, and the removable section is made a "driving fit." The rim is made of segments of yellow poplar, glued and nailed together, and built on to the spider. A section of the face is attached to a bar or slide in the upper spoke of the spider and held firmly to the spoke by a bolt passing through it, as shown in Fig. 1. This section is of a size to suit the shaft for which the pulley is intended, and is easily removed by the withdrawal of the bolt. This method of fastening, it is claimed, makes it possible for a man without assistance to connect to shafting any size or weight of pulley he is able to carry up a ladder in one-fifth of the time required for other pulleys. The pulley can be used as a loose pulley when required by putting a setting in from the side of the hub and raising the iron section from the shaft.

Fig. 1 shows the pulley as made in large diameters, and Fig. 2 as made in medium and small diameters.

The voyage of the Government torpedo boat "Cushing" from Washington to New York, last week, without

distance to ascertain whether the Planes will be put in operation at any time. The whistle will announce the hour for the men to report, the number of blasts indicating the hour.

The Jersey City Galvanizing Company have opened a store at 112 John street, opposite Cliff street, New York, where they intend adding a general jobbing business in plain and galvanized sheet iron, corrugated and formed sheets, zinc, spelter and galvanized specialties generally, as set forth in their advertisement in our columns.

One of the most lofty of the new down town "sky scraping" buildings in New York City is about to be put up at the corner of Nassau and Spruce streets, by the American Tract Society. The building will have 23 stories, and its total height will reach about 300 feet. The cost is estimated at close on \$1,000,000, and it is expected to be ready for occupancy by May 1, 1895. The height of the new office buildings is only exceeded by the celerity with which they are run up.

The Use of Water Tube Boilers in the Navy.*

BY WALTER M. M'FARLAND, PAST ASSISTANT ENGINEER, U. S. N.

In this matter of water tube boilers I shall confine myself to the type known as tubulous or coil boilers, merely mentioning that years ago a water tube boiler, invented by Engineer-in-Chief Martin of the navy, was in use for some years and gave satisfaction. This, however, was a shell boiler, and its weight was about the same as that of fire tubular boilers, so that it does not come properly in the category we propose to discuss.

It may be stated at the outset that coil boilers possess certain advantages which recommend them for use in naval vessels, and would make their adoption a certainty but for one or two features. From their successful use naval designers have had their ultimate adoption in mind and have watched the development with the greatest interest. In our own navy extended experiments were made by boards of naval engineers under the direction of that great engineer Isherwood on the Herreshoff boiler, so that full information was possessed in this respect. Experience with it, however, was not such as to warrant its adoption for use in large vessels.

The advantages offered by coil boilers for naval vessels may be stated as follows:

Reduction of weight of boiler and contained water, adaptation to very high pressures, safety against disastrous explosion, rapidity of raising steam, freedom from injury due to forced combustion, facility in renewal when worn out.

Against these advantages is to be set: Greater injury by corrosion; more care required in feeding. As a matter of fact, if it were not for the trouble due to corrosion, there would be hardly anything to be said against the coil boiler, for the difficulty sometimes due to feeding is a matter of training of the attendants. A friend recently wrote me in regard to the boilers of the "Monterey," where each fire room has two Ward boilers and one cylindrical: "One feed pump can be made to supply both Ward and Scotch boiler in battery, but every chump who calls himself a water tender can't do it."

It is hardly necessary to elaborate the advantages, but it may be remarked that the reduction of the weight is the greatest. For the last ten years the demand on the designer of naval machinery for increased power on reduced weight has been growing stronger, and although forced draft does materially reduce the boiler weight, it has not been an unmixed blessing. When we reflect that coil boilers weigh less than half as much as cylindrical ones for the same power, and that they can be forced to any extent without danger of injury, we see how desirable the coil boiler becomes.

As in the case with many other improvements in steam machinery, the navy has followed rather than led outside practice. The reason for this is not hard to understand when we reflect that the officers charged with the carrying out of Government work have not the free hand of those in civil life. A designing engineer frequently has unusual opportunities given him by the fact that some yacht owner demands exceptional

speed, and is willing to sacrifice almost everything to attain it. Such a case would offer a splendid opening for the trial of a tubulous boiler.

In 1885 the late Admiral Simpson of the navy, who had been president of the Naval Advisory Board, in an inaugural address as president of the Naval Institute, made the remark that the great necessity for improvement in naval vessels was in reduction of weight of machinery, and that he thought it lay in the direction of using Herreshoff boilers rather than those of the ordinary shell type. He doubtless selected the Herreshoff boiler for the reason that some launches with this boiler had been used in the navy, and it was the only one with which he was familiar. In that society it was not considered the proper thing to discuss or criticize the inaugural address of the president, so that no reply was made to the remark at the time, as could very readily have been done; but at an adjourned meeting which I attended, Passed Assistant Engineer J. C. Kafer, then attached to the Bureau of Steam Engineering, did discuss the subject in an informal way, and he remarked that the Engineer-in-Chief of the navy, who was then Charles H. Loring, was fully alive to the promise of tubulous boilers, but that he was not willing to stake his professional reputation on their success by powering a vessel of any size with them. He was perfectly willing, Mr. Kafer said, to advocate their adoption experimentally on a small vessel, but it must be understood that it was an experiment; and he called attention to the fact that it was a very easy matter for people who had no responsibility attending their recommendations to advise certain lines of action, while the ones on whom the responsibility came were necessarily compelled to be more conservative.

Not very long after this a test of a Ward launch boiler was made by a Board of Naval Engineers. Mr. Ward having offered his boiler for test and agreed to defray the expenses, and this test showed excellent results both as regards economy of evaporation and power for a given weight. Herreshoff boilers had been used, as I have already said, in naval launches for some time, but they were not entirely satisfactory in every respect and had not been generally adopted. The test of the Ward boiler gave information of a type of boiler adapted to all the requirements of naval purposes, and in 1888 several of them were fitted to naval launches. Their success was very marked, and since that time no new boats have been built which have not been fitted with coil boilers, although other types besides the Ward have been used, a number of Towne boilers having been fitted, and also one or more each by Roberts and Almy. Our experience with the Ward boiler has been more extended than with any of the others, and I have heard a number of officers who have had experience with it in different portions of the globe testify uniformly to their entire satisfaction with it.

About 1888 the Navy Department made a contract with the Herreshoffs to build the "Cushing," and the design in every respect was left to them. At first it was the intention to use Herreshoff boilers, but subsequently that firm, having acquired the control of the Thorneycroft patents for this country, requested and obtained permission to use Thorneycroft boilers in the "Cushing." In the early part of 1890 the "Cushing" was tested officially after having been given a number of private

tests by the builders. The official test as well as the others were very satisfactory, and showed the boilers to fulfill the requirements of the case with great satisfaction.

In the fall of 1890 a series of tests of one of the boilers of the "Cushing" was conducted by a Board of Naval Engineers under the presidency of Chief Engineer Loring, and a large amount of valuable information obtained. A copy of the report of this board was published in the report of the Bureau of Steam Engineering for 1891.

In 1888 Engineer-in-Chief Melville of the navy urged upon the Secretary the importance of experiments on a large scale, to determine the suitability of tubulous boilers for use as a part or all of the boiler power of our naval vessels, and in accordance with his recommendation the Secretary sent out an invitation to all the builders of coil boilers in this country, inviting them to submit plans and prices to meet specifications which had been prepared by the Department. Some 15 or 20 replies were received, and in 1889 an invitation was sent to the makers of those boilers which appeared adapted, asking them to suggest a time when they would be ready to have their boilers tried. Four of the firms who had previously replied acknowledged the receipt of this letter, but only two of them actually submitted boilers for trial, William Cowles and Charles Ward. A boiler made by each of these gentlemen was tested by a Board of Naval Engineers under the presidency of Chief Engineer Loring, and the report giving the results was published in the report of the Bureau of Steam Engineering for 1890.

As a result of this competitive test the boiler submitted by Mr. Ward was adjudged to have given the best performance, and in accordance with the terms of the proposition under which the tests were made a contract was concluded with him for supplying boilers for the United States steamship "Monterey," to furnish the steam for 4200 horse power in triple expansion engines. The trial of the "Monterey" took place in 1892, and the boilers gave a very good account of themselves, the engineer officers who attended the trial speaking in the highest terms of their creditable performance. The trial of the "Monterey" was not in every respect a complete success, because the horse-power of the machinery fell slightly below that required by the contract, and in explanations as to the cause of this deficiency there was some difference of opinion. There was no means of telling certainly how much steam was supplied by each kind of boiler (there being two single ended cylindrical fire tubular boilers besides the four Ward boilers). The naval engineers who were present attributed the failure to attain the horse-power to lack of skill on the part of the firemen, while I have understood that engineers connected with the Union Iron Works, who built the vessel and all the machinery except the Ward boilers, thought that the trouble was partly due to the coil boilers. They thought this was not due to any defect in the boilers themselves, but to the fact that their position in the ship was such that it was difficult to clean the fires and keep them in the best possible condition, and that on this account there was a falling off.

It is to be noted in connection with this trial that a very high air pressure was used at times, as much as 4 inches of water, and although some leaky tubes were developed in the cylindrical boilers, the coil boilers showed no signs

* A paper read before the American Society of Mechanical Engineers.

runs up to 60 and even 65 per cent. Such a statement is comforting to a depositor who merely wishes to know that his money is in an absolutely safe place, but it is the reverse of comforting to a stockholder whose capital is largely or wholly invested in such stock. In this case the security of one class of persons interested in banks is almost the impoverishment of another class, because it is doubtful if many banks will be able to pay dividends this year. Their surplus is not generally large enough to permit the distribution of any considerable part of it for dividends. Thus does a season of prolonged business depression ultimately reach individuals who are apt to fancy themselves free from the disturbing influences agitating ordinary commercial life. Holders of bank stocks and miscellaneous securities are as much and as deeply interested in the well being of the ordinary manufacturer or business man as he is himself, but it sometimes takes a convulsion to make this homely fact fully realized.

The Baby Bessemer.

Some years since a determined effort was made to introduce into this country the use of small Bessemer converters for making steel castings in ordinary foundries. A number of plants were built and some very enthusiastic claims were made. All of the works then constructed, with a single exception, have been dismantled. The work done by these "baby" Bessemer works was really very showy, the exhibit of the Stenay Company at the Paris Exhibition being particularly fine. Now comes another claimant, concerning the achievements of which a number of reports have drifted across the Atlantic. It must be confessed that Americans have grown very skeptical on the subject, but on the whole the Walrand-Legenis process comes before the metallurgical world with very respectable backing. G. J. Snelus, the well-known English authority, presented some data before the Iron and Steel Institute at the last meeting and has been supported by R. M. Daalen of Duesseldorf, a very eminent German engineer. Briefly, the Walrand-Legenis process consists in adding at the end of the ordinary blow a definite quantity of melted ferrosilicon, then making an after blow, turning down when the extra silicon has been burnt out and adding the ordinary final additions of ferromanganese as circumstances require. The whole trick is therefore to get a high final temperature by blowing silicon out toward the end of the operation.

The process has been in operation at Paris with one 600-pound and one 1200-pound converter, at Hagen, Westphalia, with two vessels which will go up to 1500 pounds, and at Creusot, where the Schneiders are using two converters of similar size. At the latter works the steel castings, chiefly car wheels, were cast in green sand, and were satisfactory. The principal de-

velopment, however, seems to have been made at Hagen. The principal point made in connection with the process is that the steel in the ladle is so hot that it can be held for a long time. A casting was made at Hagen in the presence of Mr. Snelus 25 minutes after the steel had been poured into the ladle. Another very important point claimed in favor of the process is the ability to produce castings coming close to physical specifications. Thus when 26.5 to 30.35 tons per square inch tensile strength was aimed at 28.8 tons was reached. Other cases were for 8-inch specimens, 28.5 to 31.75 tons aimed at; 29.46 tons obtained, with 15.25 per cent. elongation, 38 tons aimed at; 34.5 tons, with 12 per cent. elongation obtained, 44.5 to 47.5 tons aimed at; 42.84 tons and 11 per cent. elongation obtained.

Mr. Snelus figures the cost of the steel in the ladles at 4.5 shillings per hundredweight, based on 16 per cent. converter waste, and pig iron with $2\frac{1}{2}$ silicon at 54 shillings per ton, or say 1 cent per pound on \$13 pig iron, with German scale of wages.

This looks pretty tempting, but, as we have said, it will take fuller evidence to convince the average American steel founder that it is safe to abandon the open hearth furnace and cling to the baby Bessemer. The question of handling scrap alone, in spite of the high final heat, seems to us one which would have to be pretty thoroughly looked into.

Southern Pig Iron Rates.—The Queen & Crescent Railroad has issued a new east bound pig iron tariff, effective May 15, giving rates on pig iron in carload lots from Southern furnaces to the following plants:

To	From Dayton and Rookwood, Tenn.	Chattanooga, Tenn.	Rising Fawn, Ga., and Fort Payne, Ala.	Birmingham dis- trict.
Wilmington, Del.	\$3.70	\$3.70	\$3.95	\$4.20
a Baltimore, Md. (rail and water)	3.54		3.50	3.50
Baltimore (all rail)	3.50	3.50	3.75	4.00
Washington, D. C.	3.51	3.51	3.76	3.76
a Boston (rail and water)	3.89		3.85	3.85
Boston (rail and water) via Providence	4.54		4.50	4.50
Elizabethport, N. J.	4.10	4.10	4.35	4.60
* a Jersey City (rail and water)	3.54		3.50	3.50
Jersey City (all rail)	4.10	4.10	4.35	4.60
Lockport, N. Y.	3.30	3.30	3.55	3.80
* a New York (rail and water)	3.54		3.50	3.50
Allentown, Pa.	3.70	3.70	3.95	4.20
Chester, Pa.	3.90	3.90	4.15	4.40
Harrisburg, Pa.	3.56		3.81	3.81
Lancaster, Pa.				
a Philadelphia (rail and water)	3.54		3.50	3.50
Philadelphia (all rail)	3.70	3.70	3.95	4.20
Pottsville, Pa.	3.70	3.70	3.95	4.20
Reading, Pa.	4.27		4.52	4.52
Scranton, Pa.	3.70	3.70	3.95	4.20
a Providence, R. I. (rail and water)	3.89		3.85	3.85

a Via Norfolk.

* In addition to above charges the cost is as follows: In lots of 50 tons and less, 60 cents per ton; over 50 tons, 50 cents per ton. † The above rates cover pier delivery only. Additional charge within lighterage limits is as follows: In lots of 50 tons and less, 60 cents per ton; over 50 tons, 50 cents per ton.

CORRESPONDENCE.

Coking in Retort Ovens and the Recovery of By-Products.

TO THE EDITOR:—I read with great interest your article on the "Recovery of By Products in Coking" in your issue of March 29. I cannot understand why American metallurgists and capitalists have so long neglected this important question. Our blast furnace practice is second to none, yet in the manufacture of coke we are 50 years behind the times. Some months ago I had occasion to look into the question of the more economical production of coke, and without attempting to go into any technical details, thought some interest might attach to my conclusions and experience in that line. I was familiar with the objections raised against the so called Belgium ovens, and frankly confess shared to a certain extent in the prejudices existing against them. I soon found that but meager information on the subject could be obtained in this country. In short, we furnacemen were condemning a system about which we knew little or nothing. I therefore concluded to visit Europe and take over a sufficiently large sample of coal to make a satisfactory test in the retort ovens, and at the same time learn as much as possible about foreign furnace practice and how it compared with ours. I visited some of the principal furnace plants in Germany and Austria. After carefully inspecting their ore mixtures and equipment and learning their fuel consumption, I came to the conclusion that if they were doing the work I saw on bad coke, the sooner we produced and used some of this bad coke the better results we would obtain. I found the coke produced in retort ovens to be just as good as the quality of the coal would admit, and superior to the coke produced from the same coal in beehive ovens. It is stronger than the beehive coke, will carry a better burden, and is less affected by the action of carbonic acid in the upper part of the furnace, as proved by samples of coke tested according to Sir Lowthian Bell's experiments, which were made from Connellsville coal in the beehive and retort ovens respectively. To these and other facts I attribute the excellent work done by the German furnaces. At one plant of four furnaces, each 65 x 19 feet 6 inches, the output per furnace daily was 125 tons of high silicon Bessemer iron. The yield of the ore mixture through the furnace was 44 per cent. Fuel consumption per 2260 pounds of iron was 2000 pounds of coke. At another plant of four furnaces, each 65 x 18 feet, the average daily output was 200 tons of high silicon Bessemer. The yield of the ore mixture was 47 per cent. through the furnace; coke consumption per 2260 pounds of iron was 1980 pounds.

At another plant the furnace was 50 x 17 feet. The average daily output was 115 tons, ore mixture through furnace yielding 52 per cent. The coke consumption per 2260 pounds iron was 1900 pounds, the product being high silicon Bessemer. The dimensions and record of an Austrian furnace visited were as follows: 68 x 20 feet, average daily output 140 tons, product low silicon mill iron, ore mixture through furnace 50 per cent., coke per 2260 pounds, iron 1970 pounds. At this plant they consider the coke inferior, it being made from a very poor quality of coal, not unlike some of our Illinois and Indiana coals in composition. At

another large plant with an ore mixture of 45 per cent. through the furnace, the product being high silicon Bessemer, the coke consumption per 2260 pounds of iron was 2100 pounds.

Other plants not mentioned were doing equally good work. The above were all prominent works and will show the prevalent practice, which certainly compares favorably with our American work. Their ore mixtures were made up of Spanish, local brown hematites, Swedish magnetites, and in some cases a little heating furnace cinder. All the plants had large batteries of retort ovens. In fact, they used nothing but retort coke. I found that the beehive oven had practically disappeared from the continent. Coke from the retort ovens is not as light colored as from the beehive. This is solely due to outside quenching. At a works near Brussels the coke was pushed into a chamber in the same plane as the oven and covered with ashes, and in from 14 to 15 hours the coke was cooled, and while made from very inferior coal far exceeded the best Connellsville in luster. I was informed that the coke was exported to Greece, that they got a better price for it there, yet the manager informed me that it was no better than coke quenched with water and gave no better results in furnace practice. The German furnace engineers informed me that they cared nothing for the looks of the coke so long as it came up to the requirements in the furnace, and whether it had or had not a silvery luster made no difference to them.

This not being a technical article, I will only say that the retort oven is a rectangular chamber of fire brick, ranging in length from 25 to 32 feet, in height from 4 feet 6 inches to 5 feet 9 inches, in width from 15 inches to 25 inches. The width is the most important part and is regulated to suit the coal coked, and varies with the volatile matter contained in the same. It differs from the beehive oven in being practically a closed retort, little or no air being admitted to the oven. There is no combustion in the interior, the oven being heated by the combustion of the gases drawn from the top in either vertical or horizontal flues in the side brick work of the ovens and under the bottom. It is due to the fact of there being little or no combustion in the chamber that the full theoretical yield of coke from the coal is obtained. This yield will exceed the theoretical one, owing to the deposition of carbon from the volatile hydrocarbons. In the beehive oven air is admitted and some of the heat of the oven is obtained at the expense of the fixed carbon in the coal, thus accounting for the decreased yield in coke. There are several systems of retort ovens. They are worked with and without the recovery of by-products. The ovens proper in all the different systems cost about the same. The difference in price in some systems over others is due to more elaborate and complete condensation machinery for the recovery of by-products, ammonia, tar and benzole. From actual working, covering six months on similar coals, I found that the increased cost of condensation machinery was more than offset by reason of the larger percentage of ammonia, tar and benzole obtained. It is claimed that the recovery of the by-products depreciates the quality of the coke. This is a mistake. There is nothing mysterious about the by-products—ammonia, tar and benzole. They are expelled as readily in the beehive practice as in the

retort ovens. The only difference is that in the first case they are wasted. Tar does add to the temperature of the oven when it is burned in it, but years of experience has proved that the abstraction of from 3 to 4 per cent. of tar from the gases does not affect the temperature of the oven. As proof of this the ovens can be gotten intensely hot, so hot, in fact, that the volatile constituents can be driven off so quickly as to produce spongy coke, and again there is always an excess of fuel gas that can be used for other purposes, and which I will dwell on later. If any intelligent man will spend a few hours around a modern coking plant he will be convinced that there is nothing whatever in this objection. I found that the best results were obtained and the most careful work was being done in Germany and Austria. In these countries the system most universally adopted is that of the Otto-Hoffman. The Otto Company is the only one that has the regenerative feature. This is most important and is well covered by patents. This company seem to have given most careful consideration to all details of the manufacture of coke and to the saving of the by-products. They without doubt obtain better results than any other system. This I think is solely due to the complete equipment of their condensation plant and careful attention to all details. Many points connected with the construction of their ovens and improvements on the condensation machinery are known only to themselves, and while not covered by patents are not generally known, owing to the secrecy maintained by this company regarding these details. I noticed that other systems approached the regenerative feature as nearly as possible without infringing on the Otto patents. The Otto plants are magnificent and without exception are profitable and give enormous returns on the capital invested.

As previously stated, I took over several tons of Connellsville coal and coked it in the Otto ovens, and the results were most satisfactory. The yield of coke from this coal was increased over the average beehive practice 8 per cent. The ovens were around in 32 hours, including charging and drawing. The percentage of tar and ammonia was all that it should be and equaled the average German practice. In a sample of coal from the Pocahontas field the percentage of coke obtained was found to exceed 80 per cent. When we consider that the average yield from that field is in the neighborhood of 60 per cent., these results appear the more remarkable.

There is also a great saving of labor with the retort oven as compared with the beehive. I frequently saw an oven drawn and charged in from 12 to 15 minutes without apparent effort on the part of the men. The drawing is done by means of a very simple machine, and the troublesome class of men known as coke drawers around the beehive ovens is largely done away with.

The repairs are also very much less than on the beehive ovens. A plant I visited, after running with no repairs for eight years, was stopped on account of a strike and they thought best to take advantage of this, as it was uncertain when they would have a similar opportunity. The ovens were thoroughly repaired at a total cost of \$470, \$310 being for labor and \$160 for fire brick, clay, &c. This plant contained 60 ovens. I thought it would be difficult to make the same showing with a beehive plant of the same capacity.

There is also a mistaken idea in regard to the cost of retort ovens. While they do cost more than the beehive oven per oven, yet it must be remembered that the capacity of the ovens is much larger, through the greater rapidity with which they are turned and the increased yield in coke. A plant of a certain number of retort ovens will produce as much coke as a much larger one of beehive ovens. To this also must be added the saving in labor and repairs. It will then be found that the difference will not be nearly so great as at first appears.

So far I have not considered the value of the by-products. They are ammonia, tar, benzole and waste fuel gas. Of these the ammonia is the most valuable. It is obtained as an ammonia liquor, the sulphate, or anhydrous ammonia; more commonly as the sulphate, however. For this there is a large demand, growing daily, and good prices are obtained for it. It is chiefly used in the production of fertilizers, anhydrous ammonia and other compounds. The demand for it in America is very large and growing yearly. The tar is also in good demand at fair prices, being used in the manufacture of roofing paper, briquettes, pitch, and the making of pavements, &c. There is a fair demand for it in this country, which is increasing. If briquettes were made to any extent in America, much material now going to waste around coal mines could be utilized and the smoke nuisance of our Western cities greatly lessened. You are in error when you state that the chief source of revenue is from the benzole. In Europe they rely chiefly on the ammonia and tar for their profits and the benzole is a secondary consideration, although it is a source of profit and pays well for the amount of capital required for its recovery. It is used in the manufacture of dyes, &c. Lastly, we have the excess fuel gas. In the Otto-Hoffman system the regenerators already referred to are used to heat the air required for the combustion of the gases at a high temperature. This reduces the amount of gas required to heat up the flues to a minimum, and admits of a large available excess of gas. With the exception of illuminating, this ranks next to natural gas in calorific power, as the following analyses will show:

Analysis of Gas from Otto-Hoffman Ovens—Percentage by Volume. Also for Comparison Analyses of Natural, Coal and Bituminous Producer Gas.

	Gas from Otto-Hoffman ovens.	Natural gas.	Coal gas.	Bituminous producer gas.
Hydrogen.....	53.52	46.00	2.18	12.00
Methylene.....	33.11	40.00	92.60	2.50
Ethylene.....	1.63	4.00	0.31	0.40
Benzole.....	0.61			
Carb. oxide.....	6.49	6.00	0.50	27.00
Carb. dioxide.....	1.41	0.50	0.26	2.50
Sulphate hydrogen.....	0.43			
Nitrogen.....		1.50	3.61	56.30
Oxygen.....		0.50	0.34	0.30
Vapor.....		1.50		

By comparing the above analyses it will be readily understood that the gas from the Otto-Hoffman ovens is perfectly stable. By actual experience it has been proved that this gas can be conveyed any reasonable distance. It far exceeds the best producer gas in value. It is used abroad for steaming purposes and greatly adds to the profits. It can also be used in mills for all

purposes to which producer gases are applied. When one considers the cost of producer gas and bears in mind that the gas from coke ovens is a waste product, it will be readily seen how valuable this would be to mills having coke ovens located in their vicinity. The gas escaping from the beehive ovens is almost entirely the result of combustion; therefore the heat obtained from these gases is mostly sensitive heat and necessitates the location of boilers very close to the ovens. This is more or less objectionable, and is entirely done away with in gases from the Hoffman-Otto ovens. At one large mill abroad the gas was conveyed through an ordinary 3-inch pipe nearly half a mile and developed 1000 horse-power from boilers located at this mill.

I can positively state that the profits from the retort ovens abroad, where competition is sharp, are enormous, and I fail to understand why no effort has been made to introduce them into this country. I know that the average coke producer and capitalist looks upon the by-products as something uncanny; yet it is an actual fact that these by-products are largely used and that the demand for the same is growing daily, ammonia, especially, being one of our most important commercial articles.

In this period of depression, when all values are so low and not likely to ever reach their former level, when every economy is being introduced, would it not be well to make an effort to get an important industry out of the old rut and at least give a trial to a process which is, without reasonable doubt, most profitable—more especially since it has been tried most successfully for more than 14 years by one of the most careful and conservative of nations? Should this be done, I feel confident that the enterprising capitalist or corporation first entering this field would be surprised at the returns on their investment, and that coals now apparently useless will produce a good furnace coke in the future.

ONE INTERESTED IN IMPROVED COKE OVENS.

Our Consul at Swansea and American Tin Plate.

To the Editor: In your issue of the 3d inst. you refer to comments made by our Consul at Swansea on American tin plate.

I have often heard it said that the Welsh as a nation are extremely poetical, and according to Bill Nye, in ancient times poets when traveling were always accompanied with their lyre. As there is neither truth nor poetry in Dr. David Charles Davies' remarks in reference to American tin plate, he must be the accompaniment to the poet as referred to above.

But the writer is not surprised in the least at what any politician from the same school as Mr. Davies belongs to has to say in reference to American tin plate, and even President Cleveland, I have no doubt, could tell us where the best duck shooting and fishing could be obtained, but I am sure were we to ask him where the best tin plate mill was located in this country he would answer that he did not believe there was a single tin plate mill in this country making tin plate from American ore, pig iron, Bessemer steel or American black sheet.

The fact that nearly 70,000 tons of tin plate were made in this country last year is not evidence enough to convince them, but there might be some excuse for the President and Dr. David Charles

Davies making such an assertion, for they possibly might never have seen nor been near a vicinity where tin plate was being made.

What do you think of our Congressman from Springfield, Ill., Hon. Wm. Springer, who in the fall of 1892 delivered a speech in Mattoon, Ill., where he ridiculed the attempts that we had made so far in this country to procure tin plates? He said: "All tin plates we now make are made from black sheet, which black sheet we import, and it only required 642 boys to dip the entire amount of black sheet for tin plate purposes consumed in the United States in one year." This speech was made at the very moment when the St. Louis Stamping Company of St. Louis, Mo., were working three eight hour turns, rolling black sheet from soft Bessemer tin plate bars which had been made by the Illinois Steel Company from American ore, coke, coal and pig iron, and the St. Louis Stamping Company to-day are ordering tin plate bars in 3000 to 5000 ton lots.

This plant is the "one in Missouri which was supposed to be a huge affair" and in which when investigated owing to a bet (as claimed by Mr. Davies) was found only a boy and girl who were "dipping black plate imported from Wales." The quarterly reports given to the Government of the increase and growth of the tin plate industry in this country are no doubt, according to Mr. Davies, "all a fake, sir, all a fake."

When petty ward politicians or 1-cent Democratic organs ridicule any movement of this nature it is not the cause of much surprise, but when even our President and leading Congressmen and men of such note and veracity as Dr. David Charles Davies, American Consul at Swansea, who hold positions of eminence under the Government, stoop to such pettifoggery and lying and make statements so contrary to fact, it shows one of two things, gross ignorance or pure maliciousness.

Here we are to-day, the whole country in a turmoil. Armies of idle men marching through the country, strikes and starvation.

Those who are working are earning less wages than they have since the war. No money to the manufacturer. We can more than supply our own market in every line except tin plate, which is the only silver lining in this our dark cloud of commercial depression. Yet every free trade or tariff reformer is doing his utmost to quench this smoking flax, which if encouraged would give employment to all the men in Coxey's, Kelley's, Randall's and Frye's armies, and bread instead of bullets to the ore miners of Northern Michigan, create a demand for coal and coke which would compel a settlement with our coal miners and coke workers, better wages for all men in Bessemer steel plants, would encourage the erection of tin plate mills four times the present capacity, increase railroad and steamship business to such an extent that the former once more would earn money enough to buy railroad supplies, stimulate steel shipbuilding; in fact, I know of nothing that would do more and do it quicker to set this country back to the prosperous times of 1890 to 1892 than that the duty placed on tin plate by the McKinley bill be indorsed by the present House of Representatives and the Senate, and hold good for the next five years; and if President Cleveland still thinks there are no tin plate mills in this country let him visit that plant in Missouri which Davis calls a "fake,

sir; a fake," and he will feel like Governor Pattison of Pennsylvania, who, when he saw the tin plate mill at New Castle, felt like the Queen of Sheba, who, when she saw the glory of King Solomon's Temple and surroundings, cried out, "The half was never told," and there would be no danger of his vetoing the measure.

WM. GARRETT.

JOLIET, ILL., May 7, 1894.

Steel vs. Iron Rivets.

To the Editor: Steel vs. iron rivets for boiler and structural purposes has become a matter of such moment as to demand national recognition. For the past three decades the whole civilized world has run wild over the achievements made in the product of Bessemer steel and its legitimate offspring, basic and acid open hearth steel. This combative combination have run rough shod over the fields of their more antiquated but superior predecessors, crucible cast steel and iron, and have made such inroads into the territory of these invaluable products as to give, however unwarranted, some cause of alarm to iron and crucible steel producers. We are frequently confronted with the remark, "They have had their day." Manufacturers must seek some other investment, and boilers and melters some other calling by which to live. This is doubtless in a small measure true, and more especially perhaps of crucible steel.

The day is far distant, however, when crucible steel will become non-essential, although the advent of open hearth steel and its rapid progress has doubtless greatly discouraged the phenomenal progress that product made in this country from 1860 to 1890. While there is but little encouragement at present for new investments in that direction, there is a fair demand for works already in active operation. Yet notwithstanding the vast increase in tonnage and applied purposes of open hearth steel, we can discover but little evidence that it will not remain as at present, a strong connecting link between crucible cast steel and the superior grades of puddled iron.

By whatever process and however far advanced Bessemer and open hearth steel may have become, they have never yet approached that state of success which would warrant their being offered in competition with crucible steel for the better grades of cutting or edge tools. Neither have similar products, compared with good iron, for a thousand and one purposes for which it is used. We would note but one instance out of hundreds, which is perhaps equal in importance to any—viz., the use of steel for rivets for boiler and structural purposes, because of its diminished cost. This, we consider, is pushing it to a position it should not under any existing circumstances be permitted to occupy.

It is well known by every metallurgist that all steel, by whatever process manufactured, becomes in proportion to the carbon, phosphorus, sulphur and manganese it contains, difficult to weld, and more especially to itself. In proportion to the rapidity with which it is cooled does it become crystallized or granular, hence brittle and very unreliable where cohesiveness is a principal element of success. Bridges are in perpetual oscillation from atmospheric influences, and the more violent vibrations of passing vehicles or cars. Boilers are subject to the successive strains of expansion and of contraction, both of which exert a most powerful and dangerous

action upon the rivets. A steel rivet, to begin with, is more dense in its molecular structure than an iron rivet, and is made much more so by the process of riveting. A steel rivet becomes so crystallized under the head and cone that very frequently the heads drop off from the mere vibrations necessary to complete the work.

This, however, is not the least of a number of evils inseparably connected with steel rivets. Presuming the boiler or structural material to be of steel, and hence of similar nature in density to the rivets to be used, we note that the holes are so punched as to allow easy admission through the two or more folds desired to be riveted together, but they are not large enough to allow for the expansion of the stem of the rivet by upsetting or riveting, and so relieve the neck from severe tension. On the contrary, the object sought is a perfectly tight combination of the parts. Hence the assembling must from the very nature of the steel rivet and its manipulation become more dangerous as this is continued, because it becomes more liable to crystallize by the operation, and consequently more defective in proportion to its continuation. It is true that such work may hold together till put in position, but before long expansion and contraction or the continual crystallizing action of vibration assert themselves, and we read the startling announcement of a bridge disaster more or less destructive of life and property, or of a boiler explosion with all its horrifying accompaniments. Investigations are made by learned theorists, and reports given to the press by manipulators of good, plain English; but a good, practical mechanic would tell us that the plates and rivets being of the same dense and unyielding material, expanded or contracted, as the case might be, and the weakest spot let loose the entire structure. But had first-class iron been used for rivets there would have existed some yielding.

BEN CATLEY.

PITTSBURGH, May 6, 1894.

The Size of Test Bars in Foundry Testing.

To the Editor: May I intrude with a word about the sizes of test bars in foundry testing? It may be taken for fact that no one size of test bar is better adapted to a certain class of work than another. Those who claim this, as at the last meeting of the Foundrymen's Association in Philadelphia, might as readily establish that test bars for loam castings should be cast in loam, those for dry sand castings cast in dry sand molds, and that for green sand castings they should be cast in green sand. The great truth in this matter of test bars is that whatever their shape, size or method of molding, they should always be made and tested in exactly the same way.

There has never been and there hardly ever can be a system of foundry testing so complete and making it so certain that bars made now or a year from now in one shop or another shall be so absolutely alike as in "Keep's Mechanical Analysis." Follow up Mr. Keep's system and you will get results like what follows:

If a water cylinder 3 inches thick and weighing 8 tons gives a bar in Keep's test that runs 450 in strength, 155 in shrinkage and 0.08 inch chill, you may be sure that the casting is free from shrinkage strains, will cut easily and is strong. If the same casting gives you a Keep bar that runs 350

in strength, 0.170 in shrinkage and 0.25 inch chill, you may be sure that you have a casting that, while it looks close and strong, will take twice as long to machine, has put its thinner portions under immense initial stress and is very likely, therefore, to show shrinkage cracks, as the iron has not the strength necessary to resist either these or its working bursting pressure in service afterward, certainly not both at once.

All this the little $\frac{1}{2}$ -inch bar tells you of the big casting, and it does it better than the larger bar would, for this reason.

The most important indication of the three is that of shrinkage. Now, given a certain mixture, pour a 4-inch square bar, a 2-inch square bar and a $\frac{1}{2}$ inch square bar all of the same length of pattern and all gated, molded and poured alike. The $\frac{1}{2}$ inch square bar, as is well known, will have shrunk the most and for the following reason: The 4-inch bar is the slowest in cooling, stays longest at the temperature where carbon separates out as graphite, and therefore contains more of this than either of the other bars. It is therefore more open and weighs less per inch of length than the equivalent 64 $\frac{1}{2}$ -inch square bars would weigh. When it was fluid, however, it contained just 64 times as much iron as the $\frac{1}{2}$ inch bar. As each inch of the 4 inch bar weighs less than 64 times each inch of the $\frac{1}{2}$ inch bar, and yet the whole 4 inch bar weighs 64 times as much as the $\frac{1}{2}$ -inch bar, exactly as it did in the fluid state, it must be longer than the $\frac{1}{2}$ inch bar; and it is.

Now, suppose that this difference amounts to 40 per cent., as it easily may. Suppose also that the 4 inch bar shrinks 0.115 inch in 12 inches. The $\frac{1}{2}$ -inch bar will then show 0.161 inch in the same length. It is just as much easier to appreciate the 0.161 inch than the 0.115 inch as that a grown person rather than a child has stepped on your pet corn.

That, tell Mr. West, is what Mr. Keep means by his "sensitive" test bars, and if Keep's tests are any better adapted to $\frac{1}{2}$ -inch stove plate than they are to heavy work, then so much the better for Keep's tests.

E. H. MUMFORD.

NETHERWOOD, N. J., May 13, 1894.

The New York, Lake Erie & Western Railroad Company have issued freight tariff No. 180, effective May 14, giving rail and lake rates via Cleveland from Pittsburgh and points taking Pittsburgh rates. The rate on iron and steel in carloads to Chicago is 11 cents per 100 pounds; to Detroit, 8 cents; to Duluth, Minn., 17 cents; Joliet, Ill., 11 cents; Marquette, Mich., 17 cents; St. Paul, Minn., 18½ cents.

The New York Powder Company have made extensive improvements in their dynamite works at Mauch Chunks, Pa., in the erection of new buildings and extension of local railroad track, connecting all the different departments.

Contracts for building six new cruisers of 5600 tons each have been awarded by the British Admiralty. Two will be constructed by the Fairfield Company, at Govan; two by the London & Glasgow Engineering Company, and two by the Naval Construction & Armament Company, at Barrow.

Washington News.

(From our Special Correspondent.)

WASHINGTON, D. C., May 15, 1894.

The Tariff.

The tariff situation increases in complication every day. Both the majority and minority are holding caucuses and conferences, the former as to methods of facilitating progress, the latter to agree upon a line of action.

The minority are united in their determination to give each item of the bill careful debate. The majority favor increasing the time of discussion. The minority are disposed to humor their opponents in this.

The evenly balanced Senate politically is no field for parliamentary tactics, as the minority have it in their power to prolong consideration and prevent action.

The majority have abandoned any fixed principle in their latest line of tariff reform, expediency and placation of hostile elements being their chief purpose, as they see no other possible chance of getting the bill through the Senate, even if a vote were reached. In all the history of tariff legislation the present situation is the most remarkable.

In reference to the metal schedule, the minority will insist upon important improvements on the Jones propositions affecting ingots, rails, blooms, slabs, &c. The early adjournment talk has been abandoned and the sentiment of the Senate is that the drift is in the direction of a protracted struggle. The minority oppose amendments in special interests, but would agree to expediting matters if a general advance could be had on principle instead of expediency. The Senate minority caucus resulted in a better understanding by the minority among themselves. It will be several days before matters will sufficiently crystallize in order to form a safe opinion. Senator Nelson of Iowa said, in his conversations with his colleagues, that he does not believe the bill, if ever brought to a vote, will get there before the summer is over.

The Armor Investigation.

Commodore Sampson, Chief of Ordnance, Professor Alger and Lieutenant Ackerman of the Board of Inquiry investigating the extended allegations of fraud in the manufacture of armor plate, after a preliminary survey of the field returned to Washington on Saturday and will go back to Pittsburgh and Homestead and renew their labors about Wednesday. Commodore Sampson proposes to make this investigation very thorough. He went to Bethlehem to-day with his assistants to be present at the test of a lot of the "Monadnock's" side armor plates. Commodore Sampson is operating on an important line of inquiry in reference to the manipulation of the machine for the test of the tensile strength of the steel in the armor plate. The charge is that the machine registered a higher tensile strength than was possible in the steel selected. The testimony of witnesses has supported this allegation. The plates embraced in the allegations were rejected, but the rejection, it is claimed, was due to the inquiry of the former board and not to comprehensive tests. The allegation in reference to bolts, while technically true, is modified by testimony that the shipment was by mistake or accident.

The House Committee on Naval Affairs will take no steps in their investi-

gation, so they now say, until the Department inquiry shall have been completed. They will then have Commodore Sampson's researches and report to aid them in their work if the House desires to supplement the Department with a Congressional inquiry.

The Carpenter Shell.

Mr. Carpenter, inventor of the Carpenter armor piercing projectile, is in Washington in conference with the ordnance chief and experts of the navy in reference to new tests which are in contemplation and important advances made in the physical characteristics of the Carpenter shell. It is greatly regretted by Commodore Sampson and others interested in American ordnance that the health of Mr. Carpenter is so much shattered. While the immediate cause of his long indisposition is inflammatory rheumatism, he suffers greatly with his eyes, caused in the beginning by exposure to the intense heats of the furnaces when making his remarkable discoveries in the treatment of steel for tool purposes. Mr. Carpenter talks very interestingly on the subject of steel with reference to his own process. He is a native of New York City, was educated in part at the United States Naval Academy and served in the Gulf squadron during the war and was in several engagements. He remarked: "We have had 43 tests of the Carpenter shell, some in competition with the Holtzer, which was the best foreign shell, to determine the relative standard. The Government has purchased \$700,000 worth of the Carpenter shell, which is the practical evidence of how we came out.

"My aim from the very beginning was to manufacture steel from American irons. Previously all our finest tool steel came from England, and England secured her iron for the purpose from Sweden. I started in to make tool steel, but the Government having tested some samples invited me to compete, which I did with the results mentioned. The Carpenter Steel Company built their works in Reading, Pa., in 1889.

"Before going into the manufacture of shell I went to England and France. I purchased the American rights of the Firminy, a French shell. I adapted these processes to my steel, but soon found it necessary to improve and invent new processes and theories. The Holtzer was ahead and was given the post of honor in scientific test. We had not a projectile which could penetrate our plates, and therefore the Government was obliged to purchase abroad. The Secretary of the Navy has since announced that for the defense of the country we now have an American shell which is the equal of any made abroad.

"When we relied upon the foreign supply the Government paid 40 cents a pound for steel of the quality required for ordnance purposes. Then the Bethlehem Company introduced the Creusot process at 33 cents a pound. Then Carnegie came in competition with them and got it down to 25 cents a pound for armor steel. For our armor piercing shot, which must be of a superior quality, we get 37 cents a pound.

"The all important question in the projectile is that of impact. The striking force of a 13-inch shell is 39,000 foot tons. The characteristics of the plate in tensile strength is 80,000 pounds to the square inch down to 47,000 pounds. The limit of elasticity must be above the tensile strength of the steel of the plate in order to penetrate and go through without injury. The

tensile strength of the Carpenter shell averages 210,000 pounds to the square inch, and the elastic limit 150,000 to 170,000 pounds. The ductility is such that it will 'upset' without cracking. The difference between the plate and the projectile is more than sufficient to penetrate. Were it not for the elasticity and strength of the oak backing it would have a tendency to eject the projectile.

"The required acceptance test is that the projectile shall pass through the plate and backing with the least amount of applied charge capable of accomplishing that result. If the projectile is of the proper strength and hardness it will land just 2 feet back of the target. If too soft, it will 'upset' or 'buckle up' and will not penetrate.

"Now, as for collusion between the plate and projectile manufacturers, that is impossible. I am not viewing it as a matter of interest nor of Government regulation, but of science. The hardening process, which is accomplished by special appliances, is so severe on the steel that should there be the least tendency to brittleness the projectile would fly to pieces while hardening. This alone proves that it would be impossible for a projectile of brittle steel to be furnished the Government without reference to the test which is always made of two projectiles selected by the Government as the least likely to pass the test. The head only is hardened and the back is hollow. The greatest care must be taken to secure the greatest toughness."

OBITUARY.

ABRAHAM GARRISON.

Abraham Garrison, engaged in the foundry business in Pittsburgh for about 60 years and senior member of the firm of the A. Garrison Foundry Company, died at his residence in Allegheny, Pa., on Thursday morning, May 10.

Mr. Garrison was 90 years old on March 4 of this year. He was born on the banks of the Hudson, near West Point, N. Y. In 1826 he came to Pittsburgh and entered the office of Kingsland, Lightner & Co., proprietors of the Eagle and Jackson foundries, the senior partner being his uncle. After remaining here for a couple of years he returned to New York and learned the foundry business there.

In 1830 he returned to Pittsburgh and became foreman of the Pittsburgh Foundry, which had been purchased by Kingsland, Lightner & Co. It stood at the corner of Fifth avenue and Smithfield street, and was the first foundry west of the Alleghany Mountains. At this foundry McClurg & Co., then the owners, made the cannon balls for Commodore Perry and General Jackson. In 1836 Mr. Garrison and H. L. Bollman purchased the Pittsburgh Foundry, taking in with them H. F. Bollman. The last named retired in 1851. In 1852 the foundry was removed to its present location on the South Side. The firm of Bollman & Garrison continued until 1865, when Mr. Bollman retired, and the firm of A. Garrison & Co. was formed, which subsequently became the Garrison Foundry Company.

For a long while Mr. Garrison was president of the Diamond National Bank, retiring last January.

The torpedo boat "Ericsson," the first United States war vessel yet built in inland waters, was launched at Dubuque, Iowa, on May 12.

The Amalgamated Association.

(By Telegraph.)

CLEVELAND.—The attendance at the convention of the Amalgamated Association of Iron and Steel Workers was conspicuously large, nearly all of the new lodges being represented. President Garland's annual report was a temperate document. Its main feature was its reference to the contract labor law, which, he said, as now administered, did not carry out the spirit of the act. Resolutions heartily indorsing the miners for what the preamble termed "their heroic stand" were adopted amid the wildest applause. The report of the Scale Committee was received at noon and consideration thereof was announced to begin on Thursday morning. The opinion of the officers is that there will be no change in the present scale.

The Sewanee Furnace Record.

James L. Gaines, assistant general manager of the Tennessee Coal, Iron & Railroad Company at Cowan, Tenn., sends us the following data relating to the record of the Sewanee Furnace, which it is claimed shows perhaps better work than that done by any other furnace in the South, considering its size, equipment and the stock used. The furnace produced in the month of April 4238 tons, having been in blast 29 days, thus making an average of 146 tons per day. The product graded 90 per cent. foundry and 10 per cent. mill iron. The ore yielded 50.3 per cent. of iron. The consumption of limestone per ton of iron was 0.67 ton, thus making the yield of the total burden of ore and stone 38.5 per cent. The fuel consumption was 2400 pounds per ton of iron of 2268 pounds. The best week was 1106 tons, or 158 tons daily, the product grading 91.5 per cent. foundry iron.

PERSONAL.

Major J. W. Powell has resigned his post as director of the U. S. Geological Survey.

Charles M. Raker, mining engineer, has returned to New York entirely restored in health, which had been seriously affected by a stay in Mashonaland, South Africa, some years since.

Fred. L. Lehman of Naylor & Co. has resigned as director of the Otis Steel Company, Cleveland, the duties of which post occupied too much time. Mr. Lehman has just sailed from Bremen.

At Pittsburgh last week the Wage Committee of the Amalgamated Association of Iron and Steel Workers met and commenced the work of formulating a schedule of wages to be submitted to the convention which meets in Cleveland this week, commencing on Tuesday the 15th inst. The report of the committee this year consists principally of the suggestions of the sublodges, and the delegates will make up the scale to be presented to the manufacturers. From reliable sources it has been learned that the scale which will probably be adopted by the Amalgamated Association contains but very few changes over the one now in force, and these only unimportant ones.

A recent sale of 3000 trolley poles in this vicinity was made at \$13.50 per pole, the seller being a Pittsburgh concern.

MANUFACTURING.

Iron and Steel.

No. 2 stack of Laughlins & Co., at Pittsburgh, has been blown out for relining and repairs. Shortage of coal and coke due to the strike would have made the banking of the furnace necessary, and it was concluded to utilize the period of idleness by making the repairs.

In the courts at Pittsburgh, last week, a bill in equity was filed by the H. C. Frick Coke Company and the Carnegie Steel Company, Limited, against P. L. Kimberly & Co. and the Atlantic Iron & Steel Company of Sharon, Pa. It is stated that in August, 1893, P. L. Kimberly gave the H. C. Frick Coke Company promissory notes for amounts aggregating \$10,213.18 drawn to the order of the Atlantic Iron & Steel Company and indorsed by them. He also gave similar notes, aggregating \$41,251.85, to the Carnegie Steel Company. In addition, Kimberly owed the Coke Company \$2,072.66 for material sold and delivered, and also owed the Carnegie Steel Company \$5,436.48. The notes were payable in four and five months. When they became due renewal notes were issued. They were not paid at maturity and were protested. Kimberly had given to the plaintiffs, as collateral security for the notes, certificates for 9176 shares of stock in the Adams Mining Company of a par value of \$10 per share. The court is now asked to grant a decree authorizing the sale of the stock held as collateral security, free of any claim of the defendants, and to authorize the plaintiffs to bid and purchase if they desire.

The Saltsburg Rolling Mill Company have been organized and are now at work on the erection of a plant at Saltsburg, on the line of the B. & O. Railroad, some eight miles from Pittsburgh, for the manufacture of fine sheet iron and sheet steel and rustless roofing sheets. The plant will consist of three sheet mills and one sheet bar mill. The engine, bar mill and two of the sheet mills are being built by the Robinson-Rea Mfg. Company of Pittsburgh, builders of rolling mill machinery, and the boilers are being furnished by the Carroll-Porter Boiler & Tank Company of Pittsburgh. The buildings will consist of a main building 80 feet wide by 240 feet long, with shedding 30 feet wide and same length and boiler house 32 x 60 feet. The buildings are of frame, roofed with iron roof, and are about completed. The firm expect to be in the market with the above lines of manufacture about October next. The officers of the new concern are as follows: S. A. Gourley, president; W. F. Stitt, treasurer, and Gill Stitt, secretary.

The Inland Steel Company of Chicago Heights, Ill., are not affected by the coal strike, since their furnaces are adapted to either coal or oil.

Rockford (Ill.) newspapers state that a project is on foot for the erection of a rolling mill at that point.

The Tennessee Coal, Iron & Railroad Company have banked down their furnace at South Pittsburgh, Tenn., partly though not entirely the result of the fact that the miners have gone out at the Whitwell mines. There is a large stock of iron on hand at that point, and the fuel which is being produced at Tracy City is more useful in the open market than as a supply for the South Pittsburgh furnace.

We are advised by the Ohio Iron Company of Zanesville, Ohio, that there is no truth in the announcement that they have decided to close down their plant indefinitely. The directors have not even been called together to contemplate such a course.

The 18-inch train has been lighted at the Albany Iron Works, Troy, N. Y.

The Phillips Tin Plate Company, makers of tin andterne plates, and F. R. Phillips have removed their offices to 918 Filbert street, Philadelphia, where they have leased for a number of years more commodious and suitable quarters for the proper display of their manufactures in tin andterne plates and proper facilities for exhibiting the various improvements in tin plate machinery now introduced and to be put on the market at an early date. W. Vernon Phillips will have charge of the tin plate company's department at their new quarters and F. Rees Phillips will assume charge of the company's works. F. R. Phillips will attend to the tin plate machinery, rolling mill, iron, steel and metal brokerage business.

The Boston Casting Company have succeeded to the business of the Wrought Iron Casting Company, having purchased their plant at 122 West First street, South Boston, Mass. They make soft wrought iron castings with a tensile strength of 60,000 to 70,000 pounds per square inch.

The Lima Steel Casting Works, at Lima, Ohio, have burned at a loss of \$20,000; insurance \$10,000. It is not certain that they will be rebuilt.

The Ashland Iron Company of Baltimore, Md., have applied for a receiver to wind up their affairs. They own three coke furnaces at Ashland, Baltimore County, which have been abandoned for a long time, and which were at one time operated by the Pennsylvania Steel Company.

Last week the Union Iron & Steel Company, Youngstown, Ohio, notified their puddlers of a reduction from \$3.30 to \$2.80 per ton on swarth iron. The men refused to accept the reduction, and the matter has been referred to the Amalgamated Association for settlement.

No. 4 Furnace of the Pennsylvania Steel Company, Steelton, Pa., is ready for blast, and No. 3 will also be ready within a week or ten days. Both stacks will be lighted as soon as a supply of coke can be obtained. At the present time No. 1 is the only stack at the above plant in operation.

The Aetna-Standard Iron & Steel Company, Bridgeport, Ohio, manufacturers of all forms of roofing sheets, iron and steel bars and miscellaneous shapes, report trade more active under the stimulus of short supplies, brought about by curtailed production from the coal and coke strikes. This firm have a part of their large plant in operation on natural gas, but a portion of it is closed down on account of lack of fuel. However, they have abundant stocks on hand, particularly of galvanized iron and black sheets, also corrugated, from which they will be able to meet all ordinary demands from their customers during the interim of the present lockout on the part of the miners. In their bar department they have two guide mills in operation on natural gas, but the remaining portion of the mill is off. The firm have also in this department sufficient stock of bars to meet all ordinary calls. This concern have recently issued a catalogue relating to roofing sheets particularly, and which contains much valuable information.

We are officially advised that the report that the plant of the Ellwood Tin Plate Company, Ellwood City, Pa., had been closed down on account of lack of coal is untrue. The plant is still in operation, but, like nearly all other concerns, will probably close within a short time unless a settlement of the coal strike is obtained.

The Bessemer department of the Wellman Iron & Steel Works, at Thurlow, Pa., has resumed operations with a force of 125 men.

The striking wire drawers at the works of the Baackes Wire Nail Company, Cleveland, Ohio, have returned to work, the company having acceded to their demands for increased wages.

Fayette Brown, formerly receiver of the Brown-Bonnell Iron Company, Youngstown, Ohio, has been awarded a verdict for \$48,000 against the Mahoning Fuel Gas Company for breach of contract. The latter concern made a contract to furnish sufficient gas to run the mills of the Brown-Bonnell Iron Company until July 1, 1890, a period of about three years; but after about one year's service shut the gas off, alleging insufficiency of supply and that the consumers were wasting at least half the gas that was supplied. The receiver entered suit for \$75,000, and the courts awarded \$48,000 and cancelled a balance of \$45,000.

The Ohio Steel Company, which concern have under erection a large Bessemer plant at Youngstown, Ohio, last week awarded a large contract to the Westinghouse Electric & Mfg. Company of Pittsburgh. The order calls for 13 25 horse-power electric motors, one 10 horse-power and one 5 horse-power. Eleven of the motors will be used in operating the mammoth tables for conveying steel and the others will be used in operating the screws for the blooming mill.

One of the Canaan furnaces at East Canaan, Conn., blew out recently, leaving the entire plant of three stacks idle.

Valentine Furnace, at Bellfonte, Pa., has been forced to bank because of inability to procure coke.

The blast furnace and Bessemer steel plant of the Bellaire Nail Works, Bellaire,

Ohio, suspended operations on Saturday, 5th inst. The furnace was banked and will remain idle until the strike in the Connells-ville coke region is over and a supply of fuel assured. From want of fuel and Bessemer iron, the steel plant will be compelled to remain idle until additional supplies of both have been obtained.

The plant of the Slatington Rolling Mill Company, Slatington, Pa., resumed operations last week, the puddlers accepting \$2.70 per ton for holling.

A determined effort on the part of striking coal miners to prevent the diggers entering the country banks of the Tuscarawas Valley has prevented a resumption of operations at the rolling mills of Canal Dover, New Philadelphia, and other places. A few days' run was secured by gathering up accumulated piles of slack, but the quality of the material made operations expensive, and that plan has been abandoned.

The Cambridge Iron & Steel Company, Cambridge, Ohio, are among the fortunate mills, having several thousand tons of coal stored in sight. Another lucky concern is Falcon Iron & Steel Company, Niles, Ohio, who have all the side tracks full of loaded cars of coal.

The works of the New Philadelphia Wire Nail Works, New Philadelphia, Ohio, have been closed down for several weeks, and there is no prospect for a resumption of operations. There has been some talk about the machines being moved to another point, but nothing definite has been decided upon by the directors. The stock is held chiefly by local capitalists.

Machinery.

P. A. Finan of St. Louis has disposed of his entire interest in the Yerkes & Finan Wood Working Machinery Company. He announces that in connection with J. A. Finan he has formed the P. A. Finan Machinery Company of 1308 Broadway, St. Louis, to buy and sell new and second hand machinery, including engines and boilers. The lines will include wood working machinery, iron and brass working tools, saw mills, &c.; wood workers' and machinists' supplies, such as band and circular saws, knives, cutter heads, bolts, chisels, &c., also drills, files, chucks, waste and oils.

The Indiana Tumbler & Goblet Company of Greentown, Ind., have just contracted with the Lodge & Davis Machine Tool Company of Cincinnati, Ohio, for a complete outfit of machine tools, including lathes, shapers, drill presses, &c., to be used in their repair shops.

At the machine shops of the Pennsylvania Railroad at Altoona, Pa., the working time has been reduced to four days a week of nine hours each.

Aetna Foundry & Machine Company, general founders and machinists and builders of rolling and tin mill machinery, Warren, Ohio, have concluded to change their business to the manufacture of steel ranges and hot air furnaces. The necessary alterations in the plant are now being made.

F. R. Patch Mfg. Company, Rutland, Vt., have added to Patch's stone planer a counter boring attachment, and the machines are now sold with or without this device, as desired.

The Valley Pump Company, Easthampton, Mass., have made entirely new patterns for the underwriters' fire pumps, strictly in accordance with the specifications issued by the associated factory mutual insurance companies. They give a guarantee that every pump shall be built in the most thorough manner, and stand the test required before being accepted or paid for by the party purchasing the same.

The Vulcan Iron Works of Chicago have secured the contract for supplying that city with hydrant and catch basin covers for the year. The price named is \$20.44 per ton.

The Union Brass Mfg. Company have been incorporated at Chicago with a capital stock of \$100,000. The incorporators are Charles Burleson, G. D. Van Vleit and James Kinsella.

William K. Ackerman and James H. Wilson, assignees for the Grant Locomotive Works, offer for sale the entire property of the company located at Twelfth street and Robinson avenue, Chicago. The property is fully equipped with all modern conveniences, nearly new, for manufacturing locomotive engines, and is located upon 30 acres of land. The property will be sold subject to mortgages amounting in principal and interest to \$225,000. The actual cost of the property in 1892 was over \$800,-

090. Proposals for the purchase of the entire property will be received at their office, Room 304, 100 Washington street until May 25.

Robert McHatton, for more than 30 years foreman of the brass foundry of Wm. Sellers & Co., Incorporated, Philadelphia, has started in business for himself at 1500 Washington avenue, in that city, in the premises formerly occupied by the Excelsior Smelting Works. He will make a specialty of brass and bronze castings for electrical, hydraulic and other work, anti-friction and type metals, lead weights and solders. With his long experience, he should be able to command a good deal of trade in his line.

E. Harrington, Son & Co. of Philadelphia report business good in their line of labor saving appliances, traveling bridges and tramways. Among recent inquiries received in regard to their productions was one from Tokio, Japan. They have just shipped a 28-inch extension lathe, with full equipment, to Brazil; a 25-inch lathe to England; seven hoists to the diamond mines, South Africa; a 54-inch lathe to the Williamsport Valve & Hydrant Company, Williamsport, Pa., and a traveling bridge and equipment to the Card Electric Motor & Dynamo Company, Cincinnati, Ohio.

The Totten & Hogg Iron and Steel Foundry Company have just closed a contract with the Irondale Steel & Iron Company for their new tin plate plant at Middletown, Ind., consisting of three 24-inch hot mills, all complete with rolls, &c., one squaring shear, two doubling shears, and a lot of spare rolls. They are still running their plant to its utmost capacity night and day, and have orders on their books still unfinished for eight 24-inch hot mills, three 20-inch cold rolling mills, two 600 horse-power engines, six 100 horse-power boilers, four pairs of doubling shears, two pairs of trimming shears, and about 40 large chill rolls, all for tin plate work.

Having completed taking the annual inventory, the Mohawk & Hudson Foundry, at Waterford, N. Y., have resumed operations.

The Ludlow Valve Company, Troy, N. Y., have secured the contract for furnishing with valves the new union station of the Boston & Maine and Fitchburg railroads, situated on Causeway street, Boston. The valves to be used are tested at a pressure of 600 pounds to the square inch.

The P. K. Dederick Agricultural Works, at Albany, N. Y., are now running on full time.

The Pedrick & Ayer Company of 1001 Hamilton street, Philadelphia, recently placed on the market a new vertical miller; a belt driven automatic compressor for driving pneumatic tools; a new style of pneumatic hoist with a differential movement and safety stop allowing the load to remain suspended without its lowering by any leakage of air, and a portable cylinder boring machine for boring the largest sized locomotive cylinders. The latter tool is suited for compounds, and is also arranged for boring cylindrical valve seats.

The Addyston Pipe & Steel Works of Cincinnati, Ohio, will build an addition to their molding shop. While the plans have not yet been perfected, it is expected that the improvements will double the capacity of the molding department and give employment to a large number of additional men.

The Brown Hoisting & Conveying Company of Cleveland are now building for the Johnson Company of Johnstown, Pa., a traveling crane having a hoisting capacity of 5 tons and weighing 120,000 pounds. The tracks on which it will run will be 800 feet long, and the crane will have a span of 187 feet.

The New Bedford, Mass., Boiler & Machine Company are to erect a new brick shop 125 x 60 feet in size, two stories high.

The Edge Moor Iron Company of Wilmington, Del., are putting up in their yard a traveling crane having a lifting capacity of 20 tons. The track on which it works is 800 feet long, has a span of 75 feet and is 25 feet high.

The boiler makers who have been on strike at the Santa Fé shops, at San Bernardino, Cal., for several weeks past, have acknowledged their defeat and gone elsewhere in search of work.

The American Tin Plate Machine & Manufacturing Company, Linfield, Pa., have their plant in full operation, turning out ten tons per day of finished plates. The concern have recently closed a contract for the sale of their entire output for some

time to come. This firm are owners of the Buckman automatic continuous seaming and tinning machines. Machinery for the manufacture of these machines is being duplicated which will double the present output.

The Kalamazoo Foundry & Machine Company, Kalamazoo, Mich., are building an addition to their foundry and machine shop 52 x 75 feet in size.

The Hoggson & Pettis Mfg. Company of New Haven, Conn., have completed a two-story addition to their plant and put in an extra 50 horse-power boiler and about \$3000 worth of machinery. The company believe that a revival of business is sure to take place within a short time.

The Corning Iron Works, at Corning, N. Y., recently had a narrow escape from destruction by fire. The flames started in the pattern shop and had almost reached the oil house, when they were extinguished. The loss is \$2000.

The Leechburg Foundry and Machine Company of Pittsburgh will ship within a short time the machinery for the plant of the Minneapolis Rolling Mill Company, Minneapolis, Minn., consisting of one 51-inch squeezer, one 18-inch bar shear, one 18-inch muck train and one roll lathe. Work on the new plant of the Minneapolis Rolling Mill Company is being pushed forward as rapidly as possible, and it is expected that operations will be commenced within the next thirty days. The first shipment of tin plate machinery to the Aetna-Standard Iron and Steel Company, Bridgeport, Ohio, was made a few days ago and consisted of cold rolling mills, hot rolls, shears and pickling machines.

The loam foundry of the Worthington Hydraulic Pump Works, at Elizabeth, N. J., has been considerably damaged by fire.

Hardware.

It is reported that a reduction in wages varying from 25 to 40 per cent. is to be made in several departments of the Winsted Edge Tool Company, West Winsted, Conn.

The Howe Scale Company, Rutland, Vt., have commenced running on full time.

The capital stock of the Chelsea Wire Fabric Company, Chelsea, Mass., has been increased \$10,000 by vote of the directors.

The Wisconsin Iron & Wire Works of Milwaukee, Wis., have been incorporated. The company succeed G. H. Norris in the ownership of the Reliance Wire Works, which Mr. Norris recently purchased from D. D. Williams. The capital stock of the new company is \$30,000, and the incorporators are G. H. Norris, J. G. Beckley and J. H. Gilman. Mr. Norris is president of the company, Mr. Beckley vice-president, and Mr. Gilman secretary and treasurer.

Burgess Soldering Furnace Company, Columbus, Ohio, advise us that business for the past three months has been very good, and they refer hopefully to the outlook for the future.

D. M. Steward Mfg. Company, Chattanooga, Tenn., report the demand for goods in their line as fairly good, orders, while smaller than usual, being more numerous. They state that they are constantly adding to their customers in crayons and pencils, and that orders keep coming in at such a rate as to preclude the possibility of getting a stock ahead, the company being sometimes three or four weeks behind orders.

E. Blair, Bucyrus, Ohio, advises us that he has sold 50 per cent. more swine jewelry during the first four months of 1894 than he did during the same period last year. Mr. Blair is making arrangements for the manufacture of another line of hog rings.

A. J. Phillips & Co., Fenton, Mich., advise us that their sales of screen doors thus far this year are largely in excess of their total shipment last year. Their factory was in operation all through the fall and winter with a full force and on full time and pay, in anticipation that when the season had arrived there would be the usual shortage in screen goods, and perhaps more of a shortage than in former years. They state that screen goods are coming to be considered as staple articles and as almost necessities, if the sales during this, an off year, count for anything, nearly all of the leading factories on screen doors being busy. A notable feature of the market this season is that screen doors of the better grades have been increasingly ordered, an unusually large number of fancy pattern screen doors having been devised. The running of their factory during the fall and winter has enabled the firm to accumulate a very nice stock and assortment of

window screens and screen frames, and they think that their capacity will enable them to keep their assortment good until the end of the season.

Standard Company, 57 Haverhill street, Boston, have enlarged and improved their well-known Dover egg beater, confident that its sale will be thereby increased.

Plumb, Burdick & Barnard, Buffalo, N. Y., having outgrown the plant they now occupy, have commenced work on their new factory at North Tonawanda. They hope to have the new works completed by the coming fall. The new plant will be operated by electric power.

John Sommer's Son, Newark, N. J., refers to the favor with which his Boss lemon squeezers are received by the trade. These squeezers are described as made out of hard sugar maple, finely finished, with strong nickel plated hinges, overlapping ends and large smoothly polished lignum vitae bowl. The cleanliness, durability and cheapness of these lemon squeezers are points which are made in regard to them by the manufacturer.

Levin Pruner Company, 37 Dey street, New York, advise us that their pruner has made its way into almost every country on the globe and that it has apparently come to stay.

Wabash Screen Door Company, Rhinelander, Wis., are having a much better business than they had any reason to hope for considering the times. They advise us that they are at this time fully up to last season's trade, and if business continues throughout the next sixty days, as the prospects now indicate, they will sell a larger number of screen doors this year than ever before, the company estimating their output at over 325,000 doors. They state that the greatest surprise in this season's business is the increased demand for fancy doors or doors of better quality. Up to the present time they have shipped more fancy doors than they did during the whole of last season.

Buck Bros., Millbury, Mass., have received a letter from Geo. S. Waite, superintendent of the Toledo Manual Training School, Toledo, Ohio, in which reference is made to the satisfaction which has resulted from the use of their tools in the school work. During the past eight years the school has purchased from Buck Bros. 100 sets of carving tools, 144 sets of carpenters' chisels and 72 sets of wood turning chisels. Some of these tools have been in use for the whole of that period and are referred to as having given splendid service.

Miscellaneous.

The Pittsburgh Crushed Steel Company, Limited, patentees and sole manufacturers of steel emery and crushed steel, have recently completed the erection of an addition to their plant 60 x 100 feet in size.

At a meeting of the board of directors of the Daniels Steel Railroad Tie Company, held in Youngstown, Ohio, on May 5, the resignation of Mr. Daniels as chairman of the concern was presented and accepted and Thomp Burton was elected to succeed him and is now holding the dual position of president and general manager. Hon. L. C. Ohl was added to the board of directors and was elected vice-president of the concern.

A. S. J. Newberry of Cleveland, Ohio, assignee of the Lorain Mfg. Company, announces that the property of the company will be sold on June 6, at Lorain. The inventory value is \$193,783.93 and the appraisal value \$118,944.42.

William N. Whitely, proprietor of the great implement works at Muncie, Ind., destroyed by fire on the 6th inst., has contracted with the Common Sense Engine Company to take his white iron castings and the Canfield Farm Implement Works to do the wood work. He will erect a temporary building for a machine shop, while the Burt Whitely Malleable Iron Works will furnish room for a paint shop. His men will be distributed to the several places and put at work and all of his orders will be filled for this season.

The Appleton Mfg. Company of Appleton, Wis., have begun the work of removing their implement factory to Geneva, Ill.

William Schleicher, Jr., has commenced the manufacture of scales at the old Daniel E. Paris stove foundry, at West Troy, N. Y., which he has leased.

Between 2000 and 3000 workmen in the various departments of the Pullman Car Works at Pullman, Ill., have gone on strike. They demand the restoration of wages to last year's scale.

The Iron ^{AND} Metal Trades.

The fuel question is the one of absorbing interest to the Iron trade throughout the country. The scarcity of Coke has led to the closing down of all but a few of the furnaces in Pittsburgh, all in the Mahoning Valley and the Wheeling district, all but one in the Shenango Valley, and nearly all in Central and Northern Ohio. It is really only the Chicago district among all west of the Alleghany Mountains which has not been affected. The result has been a rise of fully \$3 on spot Bessemer Pig in Pittsburgh, \$13 having been offered for round blocks. It is rumored that 20,000 tons have been sold in the Valley, for July, August and September delivery, at \$11, which is significant as showing that some one has the courage to believe that the recent low range will not be again reached, the lowest prices in the Valley having been about \$9.50.

Some of the Eastern Steel works have been caught with a small supply of Bessemer Pig, and are now negotiating for blocks aggregating between 20,000 and 28,000 tons in the yards of New York and New Jersey furnaces, who, however, are holding prices very high.

An increasing number of mills in the West are idle or are close to the end of their fuel supply, and some of the Eastern mills are finding it very troublesome to get enough gas coal for their producers. The result is that prices along the whole line of Finished Iron and Steel are firmer, and for the time being cut throat quotations are not being made. But as yet there has been no general or substantial advance, nor any improvement in price in proportion to the rise in values on spot raw material. Buyers show very few symptoms of alarm, and sellers are by no means confident. In many cases the fuel shortage, which restricts production, acts also in curtailing consumption.

It remains to be seen whether the deferred demand will be large enough when the trouble is over to keep the furnaces and mills so busy for a considerable period that they can hold out and get higher prices. Each week of enforced idleness will add to the chances in that respect, but as yet only the first feeble indications of it have appeared.

It is probable that a determined effort will be made at an early date to get the Connellsville Coke ovens into blast. So far as the soft Coal situation is concerned, the general conviction is that little can be expected in the way of settlement from the Cleveland conference.

Chicago.

(By Telegraph.)

Office of *The Iron Age*, 59 Dearborn street, }
CHICAGO, May 16, 1894. }

Another week of the Coal strike has passed without serious inconvenience to manufacturers and other consumers in this vicinity. The Coal men are now of different opinions with regard to the prospects of the immediate future. Some say that another week will develop very great scarcity, while others state that more miners are getting to work at different points in the West, and that enough Coal can be secured to keep everybody supplied. The strike, however, has had one good result—namely, it has convinced buyers that the Iron market really has a bottom. Inquiries are better and sales are being made at advanced prices to those who a short time since were holding off for a further decline. This movement is helped by the prospective advance in freight rates.

Pig Iron.—Sellers of local Coke Iron report that they have just had the best week's business for a month. It has not grown out of a general improvement, however, but the business has been placed by foundrymen here and there who have secured more orders for their products and are consequently covering their requirements. Among the sales were several of 1000 tons each. Good inquiries are still in hand, and prospects are excellent for a continuance of the buying movement. Concessions in prices are no longer being made, but on the other hand some effort is perceived to mark prices up a trifle. Southern Coke Iron is quiet, but some figuring is being done on a few fair sized inquiries. Soft grades are becoming scarcer. Southern Charcoal is in better demand than Lake Superior Charcoal, being available at a slightly lower price. Quotations are given as follows for cash:

Lake Superior Charcoal.....	\$15.00 @ \$15.50
Local Coke Foundry, No. 1....	11.25 @ 11.50
Local Coke Foundry, No. 2....	10.50 @ 11.00
Local Coke Foundry, No. 3....	10.00 @ 10.50
Local Scotch.....	11.50 @ 11.75
Ohio Strong Softeners No. 1....	12.60 @ 13.60
Southern Silvery, No. 1..... @ 11.50
Southern Silvery, No. 2..... @ 11.00
Southern Coke, No. 2.....	10.00 @ 10.35
Southern Coke, No. 3.....	9.75 @ 10.00
Southern, No. 1, Soft.....	10.25 @ 10.50
Southern, No. 2, Soft.....	9.75 @ 10.00
Tennessee Charcoal, No. 1....	15.00 @ 15.50
Tennessee Charcoal, No. 2....	14.50 @ 15.00
Alabama Car Wheel.....	17.85 @ 18.00
Jackson County Silvery.....	15.00 @ 16.00
Other Ohio Silvery.....	12.50 @ 13.00
Coke Bessemer.....	12.00 @

Bars.—The volume of business is growing and not only are fair sales being made, but large inquiries are being received. Consumers would like to place contracts now for deliveries a long time in the future at present prices, but manufacturers are less anxious to sell than they have hitherto been and are in most cases absolutely declining to quote on anything except for prompt delivery. Several season contracts are coming up now for deliveries extending through the whole of the next 12 months, but they are exciting little interest among manufacturers, who are not disposed to consider them until the Coal question is settled. Iron prices are irregular, some of the mills still selling at 1¢ on a limited range of sizes, but the large mills are quite firm at 1.10¢ @ 1.15¢, Chicago, half-extras, on general assortment. Soft Steel Bars are considerably firmer on account of the advance in Billets, and some manufacturers are declining to quote until prices of material become more settled. The regular price now for mill ship-

ments is about 1.25¢ Chicago, but only for moderate lots and prompt delivery. Small lots from stock are quoted at 1.20¢ upward for Bar Iron and 1.30¢ upward for Soft Steel Bars, according to quantity.

Structural Material.—Quite a little trade is reported in Bridge stock. Mills are stiffening and only make quotations for prompt acceptance. Sellers of Beams in large quantities have now narrowed to two or three concerns. Local yards are driven to their full capacity. The demand from the country still continues large, but city trade is light. Quotations on mill shipments, Chicago delivery, are as follows: Beams and Channels, 1.45¢; Tees, 1.60¢; Angles, 1.40¢; Universal Plates, 1.40¢. Small lots from stock sell at 1.60¢ @ 1.70¢ for Beams, 1.50¢ @ 1.60¢ for Angles, and 1.70¢ @ 1.80¢ for Tees.

Plates.—Manufacturers are very firm and one concern has advanced its price very decidedly. Orders from mill and from stock have recently been much more numerous, but quotations are only being made for prompt acceptance. Mill shipments, Chicago delivery, may be quoted as follows: Tank Steel, 1.40¢ @ 1.50¢; Flange Steel, 1.60¢ @ 2.10¢; Fire Box, 2.50¢ @ 5¢. Store prices are as follows: Iron or Steel Sheets, Nos. 10 to 14, 1.80¢ @ 1.90¢; Tank Steel, 1.60¢ @ 1.85¢; Flange Steel, 2.10¢ @ 2.35¢; Boiler Tubes, 75 % off.

Sheets.—The good demand for Black and Galvanized Sheets continues, but sellers are steadily growing fewer in number. Prices for mill shipment of No. 27 Common Stove Pipe Iron, Chicago delivery, are about 2.30¢ @ 2.40¢, with small lots from stock 2.65¢ @ 2.75¢. Galvanized Iron is tolerably firm at 77½ % discount on mill shipments and 75 % and 10 % for small lots. Sheet Copper continues to be quoted at 14¢, with no discount.

Merchant Steel.—Inquiries are coming up on season contracts, but manufacturers hesitate to make quotations at present. One concern ask an advance of \$3 per ton. The general demand is light. We quote mill shipments, Chicago delivery: Smooth Finished Machinery and Tire, 1.70¢ @ 1.80¢; Open Hearth Spring Steel, 1.85¢ @ 1.90¢; Bessemer Machinery, 1.55¢ @ 1.60¢; Bessemer Tire, 1.40¢; Ordinary Tool Steel, 6¢ @ 7¢; Specials, 12¢ and upward.

Billets and Rods.—Sales are reported aggregating 4500 tons at \$18.75 and quotations now are \$19 @ \$19.50. Local manufacturers report that they are absolutely unable to make any further business for delivery before July 1. Sales of Wire Rods have been made from this district to consumers in other sections. Quotations are firm at \$25.

Rails and Track Supplies.—Manufacturers of Steel Rails report a fair business recently entered and further inquiries in the market. The South Chicago mill is now very well supplied with work for the summer months and an effort is being made to have deliveries extended on some of the contracts, so as to insure operations later in the year. Good orders are now in the market for Steel Splice Bars, but some manufacturers are refusing to quote on account of the unsettled condition of Billets. Prices are as follows: 1.35¢ @ 1.40¢ for Steel Splice Bars; 2.20¢ @ 2.30¢ for Track Bolts, with Hexagon Nuts; 1.60¢ @ 1.70¢ for Spikes, and 1.60¢ for Links and Pins.

Old Rails and Car Wheels.—A sale of Old Iron Rails is reported at \$10, Chicago. The railroads now realize that this is maximum value, and are willing to sell if they can get it for Rails on their line of road. Old Steel Rails are quiet, with nominal quotations \$6.50 @ \$7 for short pieces and \$9.50 @ \$10 for long lengths. Old Car Wheels are stagnant, with quotations continued at \$10 @ \$10.50.

Scrap.—The scarcity of Bessemer Pig Iron at Pittsburgh has been expected by dealers to have some effect on the Steel Scrap market here, but so far their hopes have not been realized. Transactions in Old Material have been confined to small quantities and have been few in number. Dealers quote the following selling prices $\frac{1}{2}$ net ton: Railroad Forge, \$9; Dealers' Forge, \$8 @ \$8.50; No. 1 Mill, \$6.50; Pipes and Flues, \$6; Heavy Cast, \$7 @ \$7.50; Stove Plate, \$5 @ \$5.50; Fish Plates, \$10; Horseshoes, \$9; Mixed Steel, gross ton, \$5.

Metals.—Carload lots of Lake Copper are unchanged at 10¢. The market is a little easier on casting brands, which are now quoted at 9 $\frac{1}{4}$ ¢. Spelter is selling at 3.27 $\frac{1}{2}$ ¢ @ 3.30¢ for prime Western brands. Pig Lead is weaker and is sold at about 3 25¢, buyers offering to take considerable quantities at a slight concession from this price.

Ward & Nash announce that they have moved into new quarters at 35 and 37 South Canal street. They make a specialty of Piano Wire, Spring Wire, Springs for all purposes, Cold Rolled Steel, Dannemora Tool Steel, Self Hardening Steel, &c. They are putting in a stock of seamless Steel Tube made by Star Tube Company of Birmingham, England.

The numerous friends of E. A. Hyde of the late firm of Forsythe, Hyde & Co. will be pleased to learn that he has again embarked in the Pig Iron commission business. E. A. Hyde & Co. will be the style of the firm, located at 808 Medinah Temple Building, Jackson street and Fifth avenue, Chicago. They will handle Lake Superior Charcoal, Ohio and Southern brands.

Louisville.

LOUISVILLE, KY., May 14, 1894

There is quite a number of small orders, but little buying save for short deliveries. So far the strikes curtailing production have had no effect on consumers, as they in turn, owing to short supply of fuel, have cut down production. Those furnaces that are oversold on certain grades have advanced prices or withdrawn from the market, but outside of Silver Gray and Soft Irons there is no scarcity and prices remain the same on Foundry and Mill Irons. Consumers yet report but little business and a better condition of things has not yet appeared. The present reduction of stocks should cause Iron to slightly advance, as many furnaces are under contracts that will take some time to fill after the present strike, and any rush of orders on the close of the present troubles should cause a stiffening of the market. We quote, for cash, f.o.b. cars Louisville:

Southern Coke, No. 1 Foundry	\$10.25 @ \$10.50
Southern Coke, No. 2 Foundry	8.75 @ 9.25
Southern Coke, No. 3 Foundry	8.50 @ 8.75
Southern Coke, Gray Forge	8.00 @ 8.50
Southern Charcoal, No. 1 Foundry	12.50 @ 13.50
Southern Car Wheel	15.00 @ 15.50

Philadelphia.

Office of The Iron Age, 220 South Fourth St., PHILADELPHIA, Pa., May 15, 1894.

The market for Steel is in a most abnormal condition, while at the same time Iron may be said to be almost absolutely dead. The former is at a premium, the latter in full supply with light demand. The difference is due to the fact that the western portion of the State has for the time being become the center of the Steel trade, while Iron is produced in large quantities both hereabouts as well as in Virginia and Alabama. The scarcity of fuel affects the Steel making districts severely, as stocks are almost exhausted and of course cannot be renewed without a full supply of fuel, hence the advance in prices and the difficulty in securing Steel at any price within reason. Iron, on the contrary, is piled up everywhere, and until there is a much larger consumption, it will be difficult to make much headway toward better prices. It is impossible to say how long this condition of affairs will continue, but in any event the chances are not in favor of materially lower prices, even though the Coal strike be settled at once. There is too much of a shortage, and we are too near the hot weather to get very much ahead of consumptive requirements, and besides that, there are other reasons which forbid the idea of a return to the low prices that prevailed during the two previous months. A reaction—possibly a very sharp reaction—in the price of Steel would follow a prompt settlement of the Coal strike, but there is no reason to suppose that it would be either serious or permanent. An advance of \$3 to \$3.50 $\frac{1}{2}$ ton in Bessemer Pig and Billets inside of that many weeks is a pretty big rise at a time when general business is in the depressed condition that it is to-day, and it will take time to educate the trade up to the idea that such prices are legitimate and safe; but all the same there is a very general belief that \$17 or even \$18 at tidewater for Billets will not be seen again for some time to come. Meanwhile everything hangs on fuel. Some mills in this vicinity can run two or three weeks longer, some have stopped quoting on new business, while others have stopped work because they have no fuel to go on with.

Pig Iron.—There is no special change in Foundry or Mill Irons, the supply being large, the demand light and sellers anxious for business. Prices vary according to circumstances, but standard brands command about last week's figures, say \$11.50 for No. 2 X and \$10.50 for Mill Irons, some a little more, some a little less, according to quantity, quality, delivery, settlements and other considerations incident to each particular case. A great many furnaces are being banked for want of fuel, but as consumers are in a similar fix the curtailment in supply is fairly offset by curtailment in consumption. Bessemer stocks are completely wiped out, so that it is hardly worth naming a price, although \$13.50 and upward could probably be realized for moderate sized lots, quick delivery, but there is nothing available at present. General quotations for Philadelphia and near by points are about as follows:

Bessemer, spot	\$14.00 @ \$14.50
Bessemer	13.00 @ 13.50
Standard No. 1 Foundry X	12.50 @ 12.75
Standard No. 2 Foundry X	11.25 @ 11.75
No. 2 Plain	10.75 @ 11.00
No. 1 Soft	11.50 @ 11.75
No. 2 Soft	10.75 @ 11.00
Standard Gray Forge	10.50 @ 10.75
Ordinary	10.25 @ 10.50

Steel Billets.—Asking prices are so far out of sight that only those whose needs are urgent can do anything with them. A few were secured recently at about \$18.50, delivered, but to-day they are held at \$19.50 to \$20 and no certainty that they can be had at these figures, as all bids have to be submitted for approval. Stocks of fuel are so near the point of exhaustion that it is difficult to get any one to quote Billets for early delivery, although the price would be satisfactory to sellers if the deliveries could be made. All hinges on the fuel question for the present, but it is hoped that some arrangement will be made before the end of the week by which work can be resumed on satisfactory terms.

Finished Material.—Those who can make deliveries are running full time at fairly satisfactory prices. The demand is not large, but as so few mills are getting out a full production buyers have to hustle around to get their wants supplied on reasonable terms. Prices are firmer and in the majority of cases quoted rates are the selling rates, simply because there is no inducement for sellers to cut prices when there are so few that are in a position to make deliveries. Large orders are not on the market to any extent, and if it were not for the enforced curtailment of production it looks as though things would be pretty badly demoralized. Under present circumstances manufacturers are not inclined to press their advantage too far, as there will doubtless be something of a reaction as soon as the strike is over. General quotations are about as follows:

Grooved Skelp, delivered	1.20¢ @ 1.25¢
Standard Refined Bars	1.30¢ @ 1.40¢
Medium quality	1.15¢ @ 1.20¢
Tank Steel	1.25¢ @ 1.35¢
Heavy Plates	1.30¢ @ 1.40¢
Shell	1.40¢ @ 1.50¢
Flange	1.60¢ @ 1.80¢
Angles	1.20¢ @ 1.30¢
Beams and Channels	1.40¢ @ 1.60¢

Wrought Iron Pipe.—Manufacturers have withdrawn quotations, and quote only as specifications are presented, but it is understood that an advance of from 5% to 10% is required, according to the size and character of order.

Old Material.—Mills are asking to have shipments stopped until they can get fuel to go on with, so that there is nothing doing in the way of new business. Prices are nominally about as follows:

Heavy Melting Steel	\$10.00 @ \$11.00
Light Melting Steel	8.00 @ 9.00
No. 1 Wrought Scrap	10.00 @ 11.00
Machinery Cast	9.50 @ 10.00
Wrought Turnings	8.00 @ 8.50
Cast Borings	6.00 @ 6.50
Old Iron Rails	12.00 @ 12.50

Cincinnati.

(By Telegraph.)

Office of The Iron Age, Fifth and Main Sts., CINCINNATI, May 16, 1894.

There has been little change in the Pig Iron market during the week; consumers who have Iron coming to them on contracts are a little more urgent to have them filled, and there are no large offerings either for present or forward delivery. The stronger Southern Iron companies are generally holding off, but there is no difficulty in obtaining enough Iron to meet the current demand, which is of a jobbing character in this district and similar sales have been made to the East. Of course there is no large consumption; even the Iron Pipe works are melting comparatively little Iron. The

Stove works are working on short time. Agricultural works are doing comparatively little and contemplate an early season, so that the reduced output of Pig Iron by the furnaces is not causing the hardship to consumers which might have been expected. In fact, the stagnancy of trade is so great that had production kept up to the normal quantity it is difficult to see how a serious break in prices could have been avoided. There is some scarcity of Soft Iron, but there is no serious inconvenience reported on that account. The demand is mainly for Coke Foundry Iron; in fact, it is almost wholly for that. Quotations are unchanged, but are scarcely more than nominal, as follows:

Foundry.

Southern Coke, No. 1.....	\$10.25 @	\$10.50
Southern Coke, No. 2.....	9.25 @	9.50
Southern Coke, No. 3.....	8.75 @	9.00
Ohio Soft Stone Coal, No. 1.....	14.50 @	15.50
Ohio Soft Stone Coal, No. 2.....	14.00 @	14.50
Lake Superior Coke, No. 1.....	12.50 @	13.00
Lake Superior Coke, No. 2.....	11.50 @	12.00
Hanging Rock Charcoal, No. 1.....	17.00 @	17.50
Hanging Rock Charcoal, No. 2.....	16.50 @	17.00
Tennessee Charcoal, No. 1.....	13.00 @	13.50
Tennessee Charcoal, No. 2.....	12.00 @	12.50

Car Wheel and Malleable Irons.

Standard Southern Car Wheel.....	16.25 @	17.00
Lake Superior Car Wheel and Malleable.....	16.25 @	16.75

Forge.

Gray Forge.....	8.50 @	8.75
Mottled Coke.....	8.25 @	8.50

Pittsburgh.

(By Mail.)

Office of *The Iron Age*, Hamilton Building, Pittsburgh, May 15, 1894.

It is not expected that the conference being held in Cleveland to-day between the Coal operators and officials of the United Mine Workers will bring about a settlement of the Coal strike. There is no harmony between the railroad and river operators, and in addition the demand that the miners' organization be recognized will also prove a stumbling block in the way of settlement. The miners have prepared a scale governing the entire country and will present it at the meeting to the operators for their signature. If they refuse to sign it, which they undoubtedly will, the conference will be brought to a close. The strike in the Coke regions is no nearer settlement than it was a week ago. The fact that the Coke workers, like the Coal miners, demand that organized labor be recognized will prolong the strike considerably. A few years ago it cost the H. C. Frick Coke Company an enormous amount of money to disrupt the organization of the Coke workers, and the same concern will spend considerably more before they will agree to treat with the men except as individuals. This is also true of all other operators in the region. This week will see the shut down of additional mills in the Pittsburgh and other districts unless the Coal strike is settled. Coal has sold up to 12¢ @ 13¢ per bushel, and as high as \$4 @ \$4.50 per ton has been paid for Foundry Coke. Bessemer Iron has sold up to \$12.50 and Billets to \$18.50 within the week. Buyers are taking on only such material as they must have and mills are indifferent about booking orders, so that the volume of business is exceedingly light.

Pig Iron.—The supply of Bessemer Iron for prompt delivery is about exhausted, both here and in the valleys, and there were only a few unimportant transactions during the week. A prominent broker here states that a customer has asked him to get the best offer he can for some 19,000 tons of Bessemer, stating that he has the Iron in stock

and can make prompt shipments. Makers of Gray Forge are asking higher prices for their Iron, and \$9 at Valley Furnace or \$9.60 Pittsburgh is the ruling figure. The very limited demand for Foundry Iron has prevented any advance being obtained for it. A number of furnaces in the two valleys that have heretofore made some Foundry Iron will run on Bessemer altogether when the Coke strike is ended. They say the demand for Foundry is so limited that it does not pay any longer to make it. In addition to this, the new Bessemer plant of the Ohio Steel Company will be started within a few months and will use from 800 to 900 tons of Bessemer Pig per day. The plant of the Shenango Valley Steel Company at New Castle uses about the same amount, and when both plants are in operation there will be very little surplus Bessemer Iron from the valleys to sell in the open market. We quote as follows for close delivery:

Neutral Gray Forge.....	\$9.50 @	\$9.60, cash.
All-Ore Mill.....	9.50 @	9.75 "
No. 1 Foundry.....	11.10 @	11.25 "
No. 2 Foundry.....	10.50 @	10.75 "
No. 3 Foundry.....	9.75 @	10.00 "
Bessemer.....	12.25 @	12.50 "

Billets.—Steel for spot delivery is still bringing fancy prices, a sale of 300 tons having been made last week at \$18.50, at maker's mill. We also note a sale of 100 tons at same price, 200 tons at \$18.25 and 500 tons for Eastern shipment at \$18, at mill in Wheeling district. Sales are exceedingly light, buyers taking only such Steel as their requirements demand, while mills are not willing to take contracts in view of the uncertainty of operations on account of the Coal strike.

Ferromanganese.—We quote \$53, delivered.

Sheets.—Some heavy buying of Black Sheets has been done within the past month, and some of the mills are well sold up to July 1. Prices are firm, and \$2.35 for No. 27 in carload lots is being obtained. Galvanized Iron is in excellent demand, and 75 % and 10 % for carload lots is the ruling quotation.

Structural Material.—The two local mills are full of work and have more orders on their books than for some months past. Prices are very firm, and 1.25¢ at mill is the minimum price for Beams. We quote as follows: Beams and Channels up to 15 inches, 1.25¢ @ 1.30¢; Angles and Universal Plates, 1.15¢ @ 1.20¢; Tees, 1.25¢ @ 1.35¢.

Plates.—No large contracts have been placed in this market recently. The probability that some of the mills will close within a few days for lack of Coal is causing them to ask considerably higher prices for such material as they have in stock. For Tank Plate, 1.25¢ at mill is the minimum price of some makers, and orders are being placed at that figure. We quote as follows: Tank Steel, 1.20¢ @ 1.30¢; Flange, 1.40¢ @ 1.50¢; Shell, 1.40¢; Marine, 1.60¢ @ 1.70¢; Fire Box, 1.75¢ @ 4¢, as to quality.

Bars.—This week will see additional mills closed unless a settlement of the Coal strike is reached. The firmer tendency in prices continues, and 1.05¢ @ 1.10¢ for Common Iron Bars are the ruling quotations. Steel Bars are held at 1.10¢ @ 1.15¢ at mill, with Bar Iron extras.

Muck Bars.—We quote \$18.25 @ \$18.50, delivered at buyer's mill. We are not advised of any sales.

Merchant Steel.—The demand is light, the large buyers not having come into the market yet to place their or-

ders for season requirements. Prices continue to show a firmer tendency, and we quote as follows: Bessemer Machinery, 1.80¢ @ 1.35¢; Open Hearth Machinery, 1.50¢ @ 1.60¢; Open Hearth Spring, 1.70¢ @ 1.75¢; Toe Calk, 1.80¢ @ 1.85¢; Machine Straightened Tire, standard quality, 1.60¢ @ 1.65¢; Cold Drawn Steel Shafting, 2.57½¢ base; Tool Steel, 5¢ @ 7¢ for ordinary grades.

Skelp Iron and Steel.—Nothing of special interest developed during the week and we continue quotations as follows: Steel Skelp, 1.10¢ @ 1.15¢; Sheared Steel Skelp, 1.20¢ @ 1.25¢; Grooved Iron Skelp, 1.25¢ @ 1.30¢; Sheared Iron Skelp, 1.35¢ @ 1.40¢.

Pipes and Tubes.—The mills are asking from 2½ % to 5 % advance on former quotations on account of having to pay much higher prices for Coal. The demand is not as heavy as one month ago and is altogether for small lots. A strike was inaugurated yesterday at the National Tube Works Company, at McKeesport, and the entire plant is idle at this writing. Some of the employees demanded a restoration of wages to the basis in force before the last reduction, which the firm refused to grant, with the result that all the employees went out on strike.

Wire Rods.—The market is bare of inquiries. With so much uncertainty as to the future operation of the Rod mills on account of the Coal strike, mills are not anxious to make contracts, while buyers believe that lower prices will rule when the Coal and Coke troubles are ended.

Wire Nails.—Under date of May 14, the Oliver & Roberts Wire Company, Limited, issued a circular to the trade withdrawing former quotations and naming \$1.05 base, with 2 % off for cash, as their price. Other mills are asking higher prices on account of the increased cost of fuel. Cut Nails are also firmer, former low quotations having been withdrawn. We quote at 95¢ @ \$1 at mill for the usual averages.

Barb Wire.—The demand is fair, and prices are showing a stronger tendency. For prompt shipments \$2.10 @ \$2.15 for Four Point Galvanized in carload lots are the ruling quotations. Plain Wire is in fair demand, and we quote at \$1.40 in carload lots.

Connellsville Coke.—Reliable information warrants the statement that the Coke operators in the Connellsville region will not grant the demands of the strikers, and unless the workmen soon show a disposition to return to work decisive action will be taken by the operators looking to the breaking of the strike. The events of the past week show that the largest concern in the region will pursue the policy of concentrating their forces at one plant, and when it is in good working order operations will be started on another. This was the policy pursued in the great Coke strike of three years ago and was the means of breaking it. The detailed report of the operation and output of the region for the week ending Saturday, May 5, shows 2032 active ovens and 15,481 idle ovens with a total estimated production of 18,157 tons. Compared with the production of the previous week this was a decrease of 32,039 tons. In the active list of ovens there was a net increase of 422 ovens. Of the ovens reported in blast the H. C. Frick Coke Company have the Valley plant of 251 ovens. No attempt was made to operate any other

of the Frick works. Within the past week as high as \$4 @ \$4.50 per ton has been paid for Foundry Coke.

Operations at the American Iron and Steel Works of Jones & Laughlins, Limited, at Pittsburgh, have not been affected by the Coal strike, the plant of the above concern being in full operation in all departments. A plentiful supply of fuel is being obtained and the firm expect to keep in full operation right along.

The Carbon Steel Company of Pittsburgh, manufacturers of Open Hearth Steel of all descriptions, have not been affected by the Coal strike, as the firm use natural gas exclusively in all departments of their plant. Inquiries and orders from the trade will have careful attention and prompt shipments will be made.

Under date of May 11 the Oliver Iron and Steel Company and the Oliver & Roberts Wire Company, Limited, of Pittsburgh, issued a circular announcement to the trade stating that the report that their plants were closed on account of the Coal strike is untrue. The circular further states that the different mills of both firms are in operation and inquiries and orders from the trade will have prompt and careful attention.

St. Louis.

(By Telegraph.)

Office of The Iron Age,
Bank of Commerce Building,
St. Louis, May 16, 1894.

Pig Iron.—The current week has been a repetition of the past ones. There is no large business doing, purchases being almost entirely confined to carload orders occasionally interspersed with 100-ton orders. The Coal strike is having a hardening tendency, and as stocks of Iron are not large a prolongation of the strike will naturally result in higher prices. The consumption of Iron is not heavy, many concerns running only half time and others even less. The local Stove manufacturers are not melting much Iron, and judging from the stocks of finished goods they have on hand, will not be compelled to increase their consumption of Iron very largely. The outlook is a trifle better, but cannot yet be called encouraging. We quote as follows for cash, f.o.b. cars St. Louis:

Southern Coke, No. 1 Foundry	\$10.75 @ \$11.00
Southern Coke, No. 2 Foundry	9.75 @ 10.00
Southern Coke, No. 3 Foundry	9.50 @ 9.75
Southern Gray Forge	9.00 @ 9.25
Southern Car Wheel	16.75 @ 17.75
Lake Superior Car Wheel	16.25 @ 16.50
Ohio Softeners	14.25 @ 14.50

Bar Iron.—The demand seems to have fallen off somewhat since our last report, but prices remain unchanged. We quote from mills 1¢ @ 1.05¢ for carload lots, f.o.b. cars East St. Louis. Jobbers ask 1.25¢ @ 1.30¢ for small lots from store.

Barb Wire.—The demand for Barb Wire continues to grow less daily, and mills are only working half turn. Prices are not likely to go any lower, but are generally expected to remain as quoted to-day—that is, Painted from mill \$1.75 @ \$1.80; Galvanized, 40¢ per hundred-weight additional.

Wire Nails.—Nothing doing in this department and plenty of Nails on hand to supply any demand which may develop, explains why prices are unchanged. Mills ask \$1 @ \$1.05 in car-

load lots. Jobbers quote \$1.10 @ \$1.20.

Rails and Track Supplies.—Nothing doing worthy of mention. Railroads do not yet see their way clear to order heavily and until they do any improvement will be looked for in vain. We quote as follows: Splice Bars, 1.30¢ @ 1.35¢; Spikes, 1.70¢ @ 1.75¢; Bolts, Square Nuts, 2¢ @ 2.05¢; with Hexagon Nuts, 2.10¢ @ 2.15¢; Steel Links and Pins, 1.60¢ @ 1.65¢; Iron, 1.75¢; Old Rails are quoted at \$10, while Steel Rails are \$26 @ \$27.

Pig Lead.—This metal has settled down to 3.15¢, with the intimation that the price could be shaded. Nothing doing and nothing in the immediate future, is the universal report.

Spelter.—There is very little business doing and 3.25¢ is the general asking price. The only favorable feature of the market is that stocks are not heavy and a good strong demand would quickly absorb what Spelter there is unsold. The demand runs almost entirely to carload orders.

Metal Market.

Pig Tin.—Prices have drooped somewhat and the market shows rather unsettled tone at this writing. The softening is attributed in part to lower London quotations by wire, but the suggestive fact remains that New York prices depreciated while London was enjoying a holiday. Meantime the arrivals here were fairly large and the advances of Straits shipments showed rather heavy movement. The inference from this is that London prices are being regulated as much as possible to facilitate distribution in the American market, and the contrast between London and New York prices movement may be due to some such movement or intention. In any event, prices have fallen in this market to 19.75¢ net cash for 5-ton lots, prompt or near future delivery, and on officially recorded sale to 19.90¢ for August delivery, with subsequent offers at 19.80¢. Jobbing business has been done at as low as 20¢ 30 days' time, in a few instances. At this writing a better price than 20¢ for ordinary jobbing quantities is the exception. Straits shipments during the first half of the month are reported as having been 775 tons to Great Britain and America and 1100 tons to Continental Europe, against a total of 1050 tons during the corresponding period last year. Arrivals the past week amount to 425 tons. This with 550 tons reported cleared from English ports would seem sufficient to relieve anxiety of any immediate shortage in the supply in this market, and might, in part at least, account for the difference between the fall in values in London and New York that has taken place during the past week.

Copper.—Slow business, tame interest on the part of buyers generally and rather soft undertone to values covers about all that there is to be noted in the way of feature so far as the local market is concerned, but lower London quotations are, at the least, slightly significant as bearing upon the general situation. The appearances are that there is more than enough copper to go around, and that fact evidently carries some weight. At the moment the quotations are 9.40¢ @ 9.50¢ for Lake Superior, 9½¢ @ 9½¢ for Electrolytic and 8½¢ @ 9¢ for ordinary Casting Stock, according to brand and delivery.

Pig Lead.—The market has been weaker and lower cost has not facilitated

business in any marked degree. In short, the buying interest have gained some advantage by operating on extremely conservative lines. They could have secured best brands at 3.40¢ here, early delivery, others at 3.37½¢, and some at as low as 3.35¢ on the spot. It is not improbable that business could be done at the latter price at this writing. Bids above 3.30¢ were strictly the exception where more than single car lots were involved.

Spelter.—Some effort was made to move prices upward on the strength of reports of smaller production and concentration of supplies, but the market subsequently relaxed in a manner rather surprising to dealers and there has been pronounced softness since, indicating that the available supply is quite sufficient. Ordinary brands were quite freely offered at 3.50¢ delivered here, and in a few instances as low as 3.45¢ was named on lots for early shipment. Besides being thus weak in tone, the market is dull here, and sales of more than single carloads are the exception.

Antimony.—Aside from routine jobbing business little has been done and the market is rather soft. Prices are barely steady at 10¢ @ 10½¢ for Cookson's, 8½¢ @ 8¾¢ for Hallett's, 9½¢ @ 9¾¢ for LX and corresponding brands.

Nickel.—Prices have undergone no radical change. The extremes are 40¢ @ 50¢, according to size of lot, &c. The demand is of ordinary character.

Tin Plate.—In forward deliveries rather more interest has been shown, but the results in the way of business were indifferent. Spot business shows no increase in volume, and has been uneven, with very close figuring on prices the rule. If anything, the buyer seems still to have the advantage, although stocks here are only fair and the assortment rather poor. For stock on the spot we quote as follows: Coke Tins—Penlan grade IC, 14 x 20, \$5; J. B. grade, full weight, \$5.15; light weights, \$4.75 for 100 lb, \$4.62½ for 95 lb, \$4.55 for 90 lb; Bessemer full weight, \$5.15; light weights, \$4.70 @ \$4.75 for 100 lb, \$4.60 for 95 lb, \$4.55 for 90 lb. Siemens Steel scarce. Stamping Plates—Bessemer Steel, Coke finish, IC basis, \$5.35; Siemens Steel, IC basis, \$5.45; IX basis, \$6.50. Charcoals—Melyn grade, IC, \$6.25; Crosses, \$7.75; Alloway grade, IC, \$5.40; Crosses, \$6.50; Grange grade, IC, \$5.50; Crosses, \$6.60. Charcoal Terns—Worcester, 14 x 20, \$5.70; do., 20 x 28, \$11; M. F., 14 x 20, \$7.20; do., 20 x 28, \$14.50; D. R. D. grade, 14 x 20, \$5; do., 20 x 28, \$9.70; Alyn grade, 14 x 20, \$5.20; do., 20 x 28, \$10 @ \$10.25. Wasters—S. T. P. grade, 14 x 20, \$4.60; do., 20 x 28, \$9; Abercarne grade, 14 x 20, \$4.50; do., 20 x 28, scarce.

The monthly production of Copper in the United States has been as follows, the first column giving the aggregate returns from the reporting mines, which include the principal Lake, Montana and Arizona producers; the second being the metal from pyrites and from a number of smaller outside sources, being estimated:

	American Product.		Total.
	Reporting mines. Gross tons.	Outside sources. Gross tons.	
Second half 1892.....	59,239	6,287	65,526
First half 1893.....	62,470	6,473	68,938
Second half 1893.....	67,290	6,253	73,542
Totals 1893 ..	129,760	12,730	142,480

1894.		
January... 10,832	1,340	12,172
February... 10,245	1,340	11,585
March... 13,759	1,340	15,099
April... 12,475	1,340	13,815

The product of the foreign reporting mines and the United States exports was as follows:

	Foreign reporting mines. Gross tons.	United States exports. Gross tons.
Second half 1892.....	39,635	17,980
First half 1893.....	41,048	20,361
Second half 1893.....	40,647	60,031
Totals 1893.....	81,495	80,392
1894.		
January.....	8,145	7,717
February.....	7,217	5,590
March.....	6,922	7,137
April.....	7,355	6,209

New York.

Office of *The Iron Age*, 95-102 Reade street, }
New York, May 16, 1894.

Pig Iron.—There is a little more inquiry, and on the part of sellers a tendency to abstain from forcing the market. Foundry Coke is getting scarce, which is interfering with melting. Negotiations are pending for round blocks of Bessemer Pig. We quote standard brands \$12.50 @ \$13.25 for No. 1; \$11.25 @ \$12 for No. 2, at tidewater. Southern Iron, same delivery, \$11.50 @ \$12.25 for No. 1; \$10.50 @ \$11 for No. 2; \$10 @ \$10.25 for No. 3; \$10.25 @ \$10.75 for No. 2 Soft, and \$10.50 @ \$11 for No. 1 Soft. Foundry No. 4 (Foundry Forge) is \$9.75 @ \$10.25.

Cast Iron Pipe.—Little of consequence has been closed in this market. At St. Paul, Howard & Harrison were the lowest bidders with \$18.74. On the 24th Springfield, Ohio, calls for 1700 tons and on the 30th Danville, Ky., for 1500 tons.

Ferromanganese.—It is reported that the leading domestic producer is canceling contracts under the strike clause. As yet very little demand for foreign has developed.

Billets and Rods.—We quote \$18.50 @ \$19, tidewater, for domestic, and, nominally, \$27 @ \$27.50 for foreign Steel Billets. Domestic Wire Rods are nominally \$26.50 @ \$27.50, and foreign \$39 @ \$40, tidewater.

Steel Rails.—The New England road has bought 2500 tons from an Eastern mill. Otherwise the run of orders is very light. It is estimated that the mills have about 220,000 tons of orders on their books for Standard Rails, of which the two large Western concerns have about 150,000 tons. One of the mills rolling Girder Rails is holding back on new orders. We quote Standard sections \$24.80, tidewater; Light Sections, \$22 @ \$24, tidewater, and Girder Rails, \$21 @ \$24 at mill.

Track Material.—We quote as follows for small lots: Spikes, 1.50¢ @ 1.70¢; Fish Plates, 1.20¢ @ 1.40¢; Track Bolts, Square Nuts, 2¢ @ 2.10¢, and Hexagon Nuts, 2.10¢ @ 2.30¢, delivered.

Manufactured Iron and Steel.—Figures have gone in for the material for the Tract Building, which will require about 2500 tons. Open Hearth Steel is specified, which rules out at least one mill, while there is also a good deal of fitting work which will make it difficult for others. The shed for the Pennsylvania Railroad pier is also in the market. It is expected that bidding will soon be done on the Presbyterian Building. Prices still continue as follows: We quote: Beams up to 15-inch, 1.30¢ @ 1.50¢ for round lots; Angles, 1.20¢ @ 1.35¢; Universal Mill Plates,

1.15¢ @ 1.35¢; Tees, 1.40¢ @ 1.60¢; Channels, 1.30¢ @ 1.50¢, on dock. Steel Plates are 1.20¢ @ 1.30¢ for Tank; 1.35¢ @ 1.40¢ for Shell; 1.55¢ @ 1.60¢ for Flange, and 1.75¢ @ 2¢ for Fire Box, and 2¢ @ 2.25¢ for Locomotive Fire Box, on dock; Refined Bars are 1.20¢ @ 1.9¢, on dock, and Common 1.05¢ @ 1.20¢; Soft Steel Bars are 1.15¢ @ 1.30¢; Scrap Axles are quotable at 1.35¢ @ 1.50¢, delivered; Steel Axles, 1.35¢ @ 1.50¢, and Links and Pins, 1.40¢ @ 1.60¢; Steel Hoops, 1.40¢ @ 1.50¢, delivered; Cotton Ties, 60¢ @ 70¢; 45-lb bundle, tidewater; Machinery Steel, 1.20¢ @ 1.40¢; Toe Calk, 1.80¢ @ 1.90¢, and Sleigh Shoe, 1.60¢ @ 1.75¢, delivered.

Old Material.—There is quite a good foreign demand for Old Rails, notably for Italy, but freights asked make business difficult. Twelve shillings and 6 pence has been offered for Italian ports, but 14 shillings is asked. Sellers of Old Rails have also marked up prices too high to make shipments possible. There is some inquiry for Old Steel Tires and Old Car Axles for shipment to China and Japan. Here, too, high freights are in the way.

Dan. W. Richards & Co., one of the oldest and largest dealers in Scrap Iron in this city, have opened offices on the tenth floor of the new Manhattan Life Insurance Building, 64 Broadway.

Robert N. Coleman, for years connected with Adams & Co. and Naylor & Co., is now with the Crane Company, 122-130 Centre street, pipe and pipe fittings.

Financial.

General business throughout the country still halts and hesitates, and the financial situation exhibits little or no change from that of last week. The same dominating conditions prevail, strikes continue and have been effective in the enforced closing down of industrial establishments, especially a number connected with the iron trade, while some of the railroads are becoming hampered by lack of fuel. The settlement of the tariff question appears to be no closer at hand, and gold shipments have continued in large volume. The railroad situation is still very discouraging. Earnings show a continued decrease, and a war of freight rates has added a discouraging feature to the outlook. The prices of agricultural products, too, continue low, with small prospect of any material advance in the near future. Wheat has again broken all May records, closing on Tuesday at the unparalleled figures of 57½¢ for May and 59½¢ for July, on unfavorable crop reports, combined with the general absence of speculation and large stocks here and abroad. On the whole, the financial situation displays no improvement, nor is it likely to do so until the tariff and labor questions are settled in one way or another.

The gold export movement to Europe has been heavy. Saturday's steamers took out \$2,900,000, and \$1,500,000 were withdrawn for shipment in the steamers sailing on Wednesday of this week; \$1,700,000 has already been taken out for next Saturday. All of the gold was taken from the Treasury, bringing the Government gold balance down to about \$88,000,000. The circulation of the country has been reduced to the extent of \$13,500,000 since May 1 by reason of these withdrawals of Treasury coin for export, as to secure gold legal tender

notes have to be withdrawn from circulation and paid into the Treasury for the metal. The decrease in circulation has been gradual since the beginning of the year. The following table, prepared from official figures, shows the fluctuations of the *per capita* circulation during the current fiscal year:

July 1.....	\$23.80	Jan. 1.....	\$25.55
Aug. 1.....	24.02	Feb. 1.....	25.66
Sept. 1.....	25.01	March 1.....	24.90
Oct. 1.....	25.29	April 1.....	24.85
Nov. 1.....	25.49	May 1.....	24.83
Dec. 1.....	25.57		

Heavy gold exports and the reduction in bank circulation will make the June *per capita* considerably below the figures for May 1. So far no particular alarm has been evinced at the shrinkage of Treasury gold, but should the outflow continue for long at its present ratio, steps would undoubtedly have to be taken by the further issue of bonds or by appeal to the banks for aid to stop the loss of Treasury gold.

The decrease in railroad earnings for the month of April, as reported by the *Financial Chronicle*, reflects to a notable degree the extent of the existing business depression. Returns from 123 roads show a falling off from last year of 13.95 %, against a decrease of 13.05 % for March, of 12.54 % for February and of 12.25 % for January. Moreover, had the coal miners' strike begun before the latter part of the month the decrease shown would have been much larger still, as the statements of the gross earnings of 71 roads for the last week of April display a falling off of 16.16 %, and those of 22 roads for the first week in May a decrease of 15.62 %. Of the whole 123 roads reporting for April, only 25 were able to show any increase in earnings, and these were, almost without exception, very small roads, while in but one case was the gain of any importance. The showing is discouraging, and has had its effect in the falling of railroad stock values on the Stock Exchange.

The total bank clearings of all the clearing houses in the United States for last week exhibited a decrease of \$126,188,000 over those of the previous week and of \$405,400,000 as compared with the corresponding week of last year. Failures, on the other hand, have been getting smaller, both in number and in the aggregate of liabilities, for some weeks past. According to *Dun's*, for four weeks of April the liabilities reported were \$8,826,862, of which \$3,687,220 were of manufacturing and \$4,677,699 of trading concerns, a very considerable decrease from the figures for previous months. Had it not been for one large failure, which more than doubled the aggregate of liabilities, last week's failures in the United States would have been below the average.

The bank statement of last Saturday showed a loss by the associated banks of \$2,065,800 in cash. Loans expanded \$2,323,100, and there was a small increase in the holdings of specie, proving that the gold exports were not drawn from this source. The result of the change was a further loss of \$2,173,575 in the surplus reserve. The banks still hold, however, in excess of legal requirements, \$80,634,575, against \$17,800,000 in the corresponding week a year ago and \$15,772,000 at the same time in 1892.

The loan market gives no sign of improvement. Call money, representing bankers' balances, loans generally at 1 %. Renewals are at 1 %. Time money is still a drug on the market. The amount of bonds offering does not decrease, while the number of individuals and institutions offering time loans ap-

pears to increase, including insurance companies in this city and banks and trust companies elsewhere. Rates are unprecedentedly low. Money for 30 days is quoted at 1%, 1½ is quoted for 60 days, 2% for 90 days, 2½% for four months and 3% for longer periods. Mercantile paper is quiet, a fact due to the dearth of high grade material. All paper of this character that reaches the market is promptly absorbed. Rates 2½% @ 3% for prime indorsements, 3% @ 3½% for first-class single names, four months to run, 4% @ 5% for others.

Speculation on the Stock Exchange has been extremely dull for the greater part of the week under review. Transactions up to Monday were quite limited and absolutely without interest or significance, being confined to casual trading by the professionals. Still the market, though dull, remained strong up to the beginning of the current week. On Tuesday, however, the bears organized their forces for a raid, attacking principally Missouri Pacific and Atchison, both of which were sold down several points. St. Paul also received their attention, but with less ill effects. Other Granger roads suffered fractional declines, and Sugar, which had sold down about 3 points during the week, experienced a further decline of 1½%. The market closed dull and weak, under various unfavorable railroad rumors and the announcement of further gold exports. The extreme fluctuations of the leading active stocks during the week ending May 16 are shown in the following list, together with closing prices on that day:

	High- est.	Low- est.	Closing May 16.
Am. Sugar Ref.....	107½	101½	103
Atchison, T. & S. Fé.....	12¾	10	10½
Chicago Gas.....	67¾	64¾	65½
Chic., B. & Q.....	79¾	78¾	78½
Chic., Mil. & St. Paul....	61½	59	59½
Chic., Rock Isl. & Pac....	69¾	68¾	68½
Gen. Electric.....	36¾	35¾	36¾
Louisville & Nashville....	47¾	46	46
Missouri Pacific.....	30½	26¾	27
National Lead, Common. 40	36½	36¾	36¾
N. Y. & New England....	6¾	5½	5½
Northern Pacific, Pfd.. 18¾	16¾	16¾	16¾
Philadelphia & Reading.. 17¾	16¾	16¾	16¾
Union Pacific.....	18¾	16¾	16¾
Western Union.....	85½	83¾	84

The railroad bond market has been weaker and less active. State and municipal mortgages have commanded a better market, while Government bonds have continued firm and rather dull. Closing rates for the latter were quoted on Wednesday as follows:

	Bid.	Asked.
2's, 1891, registered.....	96	118¾
4's, registered.....	118¾	118¾
4's, coupon.....	118¾	118¾
5's, registered.....	117¾	118¾
5's, coupon.....	117¾	118

Sterling exchange has remained firm at the gold exporting point, but dull, in consequence of the small offering of bills. Unless the supply of exchange increases it is likely that the steamers sailing for Europe at the end of the week will take out large amounts of gold. Actual business was done on Wednesday at \$4.87½ @ \$4.87½ for 60 days, \$4.88½ @ \$4.89 for demand, \$4.89 @ 4.89½ for cables and \$4.86½ for commercial. Domestic exchange on New York is quoted as follows: New Orleans, commercial 75 premium, bank 150 premium; Charleston, buying par, selling ½ premium; San Francisco, sight 10, telegraph 15 premium; Savannah, buying par, selling ½ premium; Chicago, 20 premium.

Bar silver is weaker and has fallen in London to 28½ pence per ounce and in New York to 62¢, nominal. Ship-

ments of the metal during the week have been large, aggregating more than 800,000 ounces.

British Metal Market.

[Special Cable Dispatch to The Iron Age.]

LONDON, WEDNESDAY, May 16, 1894.

Pig Tin prices have fallen about £1. 7/6 during the week, or to £71. 7/5 for prompt delivery. There was some improvement early in the week, due partly to outside speculative buying and American purchases, but upon these demands being supplied the market receded. Dealings have been restricted to some extent by the holidays. The market to day is weak, with prices at £70. 15/ for prompts and £71. 5/ for three months' futures.

Copper has ruled rather lower with Merchant Bar prompts down to £39. 10/, and the market has been flat. Outside speculation is dormant. Consumers have purchased fairly, but doubtful American advices and holiday inaction had adverse bearing. The market is now soft. Merchant Bars are quoted £39. 10/ for prompts, £39. 17/6 for three months' futures and Best Selected English at £42. 10/.

Tin Plate business has been restricted chiefly to retail lots for prompt delivery. There is suspense pending further tariff news, and the outcome of the gauge question prevents operators from buying for future shipment. The tendency generally is to await definite news from the United States. Shipments latterly have been very small. Stocks here are the largest on record, and increasing. Liverpool quotations are as follows:

IC Charcoal, Alloway grade.....12/ @ 12/6
IC Bessemer Steel, Coke finish.11/3 @ 11/6
IC Siemens.....11/6 @ 11/9
IC Coke, B. V. grade, 14 x 20.....Nominal.
Charcoal Terne, Dean grade.....10/3 @ 10/6

Pig Lead business has been slow and the market is hardly steady at £9 @ £9. 2/6 for soft Spanish.

Spelter prices have not varied much from £15. 12/6, and the market remains in a quiet condition.

Pig Iron warrants have undergone little change. Last dealings were at 41/9 for Scotch, 35/6 for Cleveland and 44/6 for Hematite.

The Canadian Tariff.—American manufacturers and merchants should be cautious as to the terms at which they sell goods to the Canadian market. We understand that the rates of duty recently established by the government are not final. In fact, a number of amendments in iron, steel and hardware have already been made and others are supposed to have been practically settled. Entries are being stamped as follows: "In consideration of obtaining immediate possession of the goods mentioned above, I hereby agree to amend this entry if subsequently required by the customs department so to do." As we understand it, the goods entered must pay an additional duty should subsequently the rate be raised. We are informed that advances in duty on wire and wire nails have already been made

or are likely to occur. The simplest method for American manufacturers and merchants to avoid all complications is to sell their goods in bond. We are advised that that course has been adopted by some leading sellers.

J. Herbert Higgins and Caleb M. Andrews have formed a copartnership for the purpose of carrying on the scrap iron, metal and turning business at 79 to 83 Mathewson street, Providence, R. I., under the name of J. H. Higgins & Co.

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HARDWARE.

Condition of Trade.

THERE is a good deal of complaint on the part of manufacturers and jobbers in regard to the condition of business, the demand being only moderate and considerably less than the average. Reports from the retail trade indicate a relatively better business, though it does not, on the whole, attain to the usual volume. There is a fair demand for seasonable goods, but even these are not going quite as freely as when better general conditions prevailed. There is comparatively little building, though there are indications that there will be an increase in this direction, and Builders Hardware is perhaps, on the whole, in somewhat better demand. Profiting by the experience of the past year, the trade are pursuing a careful policy and are avoiding purchases beyond their necessities, preferring to keep stocks low, and in some cases broken, rather than incur indebtedness in the discharge of which they may have difficulty. The condition of the market in regard to prices encourages this policy. The trade realize that during the past year, and even since January 1, there has been a perceptible shrinkage in the values of many lines, and they naturally desire to avoid further accumulations of stock, which may possibly be depreciated on their hands. Jobbers and manufacturers generally recognize the wisdom of this policy on the part of their customers, and are in many cases encouraging it by suggestions against overbuying when they see any disposition to do this. At the same time they are willing to make concessions in prices to houses of unquestioned responsibility, and as a result prices to close buyers are somewhat irregular and have on many goods a lower tendency. Comparatively few failures are reported or apprehended, the trade generally being regarded as in a sound and healthful state financially. The effect of the strikes is being felt to an increasing extent, and may have an important influence on production and prices of goods which lie near the raw material. The question as to the probable future course of the market is a difficult one, deserving

careful attention on the part of the trade. Prices in many lines are exceedingly low, and it may be that in some cases they have touched bottom.

Chicago.

(By Telegraph.)

The volume of business in Shelf Hardware continues about as reported during the past two weeks. Jobbers characterize the condition of trade as very fair under the circumstances, although they say that they could handle a great deal more business without severely taxing their facilities. The demand now seems to be of a character which will be steadily maintained, as it rests entirely on the necessities of consumers and merchants. There is no speculation whatever in the buying which is now being done, and the break in freight rates to far Western points is not stimulating the demand from this jobbing center. Staple goods are comparatively quiet, except Barb Wire and Tin Plate, which are moving more freely than most classes of goods. Tin plate is still scarce and jobbers are regularly advising their traveling men of actual stocks on hand, so that no sales will be made which cannot be immediately filled from stock. Heavy Hardware jobbers report a quiet condition of business with no prospects of an immediate improvement. The Indian warehouse established in this city was the point of much interest yesterday, owing to bids being received and opened for about \$1,000,000 worth of supplies, in which are included large quantities of Hardware. Local manufacturers and merchants are very generally bidding.

St. Louis.

(By Telegraph.)

Hardware jobbers report a fairly satisfactory trade and state that the demand for shelf goods is particularly encouraging. A hot spell has swept through this section during the past few days and has largely increased the demand for hot weather goods. Manufacturers and jobbers of Gasoline Stoves report a very heavy demand, so much so that should the present warm weather continue their sales will nearly equal those of last year. Wire Cloth continues in heavy demand and \$1.55 to \$1.60 is the current quotation. Wire Nails and Barb Wire are both dull, and prices, while unchanged, are inclined to weakness. Prices in many lines are lower than they ever have been, and it is doubtful if in some lines manufacturers are coming out even. However, raw material, wages, &c., are all lower, and lower prices for the manufactured product are the natural

result. Jobbers anticipate a quiet summer and are making their purchases accordingly.

Baltimore.

CARLIN & FULTON.—Though the number of mail orders during the present month seems more numerous than in April, the result probably of good weather, yet with the low prices and the small quantities the aggregate of sales is far from being satisfactory.

The situation is not at all improved by the continued indifference of Congress to the business interests of the country, and the strike in the coal regions of Maryland and the adjacent territory also depresses trade. We had hoped that inasmuch as the miners in these sections had made their contracts for the present year and were seemingly satisfied there would be no trouble, and we understand that really the sentiment of the majority is against the strike in the section referred to, but through coercion those willing to work have had to join the ranks of those who are dissatisfied, and what the result will be it is hard to say at present, though we fear for the usual result, the loss of millions of dollars to both the employer and the employed.

In certain sections of our market the shipment of fruits and early vegetables is putting considerable money in circulation, which in view of the low price of other farm products is a matter of great comfort to the farmer, and which has also its beneficial effect upon the local stores.

In anticipation of the scarcity of Wire Nails, which will be the result of the continued scarcity of coal, the market seems considerably firmer, but the effect will not be so greatly felt on account of the lack of demand, and were all manufacturing to stop necessarily for a short time, in many lines there would be no great regret, as probably better prices would be obtained for goods already manufactured, of which the quantity is possibly great enough for the present dull season.

Collections are generally fair, though of course there are the usual number who ask accommodation, which has always been the experience of even the best years of business.

Louisville.

W. B. BELKNAP & CO.—After a disappointing April, the movement of iron and steel is slightly better for the current month. Orders are more numerous and for better amounts. Collections are fully as good as in past years at the corresponding time. The decrease in the number of failures also is an encouraging symptom. Owing to the coke strike (but for no other assignable reason) there has been an advance in Wire Nails, and a little stiffish talk along the steel line, but the patient is too nearly exhausted to undertake any very offensive attitude yet awhile. Mills seem to be rather inclined to fill out their order books rather than ask any more money for product.

While the consumptive demand is not large, even at the low prices, there is one factor which can hardly be left out of account—viz., what the Bicycle tire men dub “resiliency” when talking up the merits of rubber tire; that is, an inclination to rebound and recover shape. According to natural laws this must be more rapid and more certain the greater the depression, and if there be any recuperative power in iron at all it should be manifested soon. The plunge has been deep and swift enough.

The consumption of pig iron per week over the country is not far from double what it was last fall. It is still some 40,000 tons per week below the maximum when all was booming.

There has been a general cleaning up around the shops, railroads, &c. Thirty-two carloads of scrap were brought in one day off the Knoxville branch of the L. & N. road, the result of general orders to scour up every available scrap. This is bound in the end to bring good results and enable even the impecunious when wasteful roads to buy rails when the now glaring difference of \$8 to \$10 per ton between billets and standard sections shall have been reduced to rational proportions.

Portland, Oregon.

CORBETT, FAILING & ROBERTSON.—Trade and collections during the month of April were a marked improvement over that of March, but that is to be looked for in any year. The increase was not so great as to indicate a radical improvement of conditions. The present state of uncertainty is such as to make jobbers hesitate to buy largely, even at present abnormally low prices. The withdrawal of quotations by some of the Eastern mills does not seem to raise the hopes of the trade for permanent advances, although it is evident that the present disturbances, if long continued, must seriously diminish supplies.

The indications of a healthier condition mentioned in former letters still continue in respect to the country trade, and while the month of May does not open with large orders, there is a prospect of a fair month's business.

Our recent experience with the “Army of Discontent,” of which you have had full account in the press dispatches, although it practically suspended freight traffic over the Union and Northern Pacific roads for several days, did not, we think, materially affect business.

St. Paul.

FARWELL, OZMUN, KIRK & Co.—Since our last report trade has continued about the same. It does not run so regularly as in years when there were fewer disturbing elements. It is more spasmodic, brisk for a day or for several days, and things then begin to look much like old times, and then it will drop off very considerably. Thus it goes up and down alternately, until it seems almost certain that this unsettled condition has become chronic.

It is not difficult to diagnose the case. Retail dealers are buying only for actual wants. Their stocks are low and when their trade shows a little activity their assortments are broken and they must order goods at once. When their trade drops off, through their customers being busy in the fields or owing to unfavorable weather, they don't need goods and none are ordered. There is little buying for

prospective trade. Still there is considerable trade, and as harvest approaches, if it promises well, the volume of trade will increase, and prices, which must then advance, will lend a helping hand and so hasten the good time coming, which we still expect in the not distant future. The country is not going to the “demnition bowwows” by a long way. Business is adjusting itself to new conditions and preparing for determined vigorous efforts under them. Whatever is wrong and harmful about those conditions, whether political or social, will be swept away and the country will again prosper.

Omaha.

LEE CLARKE-ANDRESEN HARDWARE COMPANY.—The situation may be summed up as follows: The country tributary to this market is in good average condition; financial affairs are on a reasonably well established basis; the prospects of an abundant harvest are very encouraging; favorable indications of returning activity in business are daily becoming more apparent, and it seems that almost the only obstacle to a favorable reaction in trade is the doubt as to the ultimate outcome of tariff legislation.

The passage of the Kelly army and other similar bodies of men across the continent has brought home to the business public a sense of the deplorable conditions that exist in some parts of the country. While it may be true that many of these men do not care to work, and many of them are cranks, nevertheless, it must be admitted that the mere fact that they are securing the sympathy of the best citizens of this section is proof of the deep-seated conviction that their cause is not entirely unjust. While it is not certain what this aggregation of unemployed may accomplish in their visit to the national capital, it is to be hoped that their protests and personal petitions may succeed in accelerating the actions of Congress.

New Orleans.

A. BALDWIN & Co.—There is a perceptible improvement in the situation in this section of the country. A great many merchants have about come to the conclusion that it is time to get their stocks into shape and are buying a little more freely than they have for some time past. The volume of business is not extra large, but the inquiries and purchases are made much more frequently and a great number of the inquiries are for supplies to be used in the next 60 days. This is particularly to be noticed in the builders' line, not only in the city proper, but in the country also. The people have evidently become tired of waiting for a final settlement of the tariff question and have decided to go on with business in the hope that the question will be finally settled before long. The trade in Texas shows a slight falling off, but not enough to become alarming. As soon as a little more confidence is restored the volume of business will improve at once.

Cleveland.

THE W. BINGHAM COMPANY.—Trade for April has been fully up to our expectations, being all that we could look for under the existing conditions. Prices are still unsteady, with a tendency to weakness, with the exception of Wire Nails, which have been advanced in this market, and Screen

Wire Cloth, which, as we predicted, is going to be scarce from now on, and prices ruling very much higher. The outlook for the future is not particularly bright. Collections are fair.

Boston.

BIGELOW & DOWSE COMPANY.—The two weeks in May show a handsome increase in general business in New England. Every one is busy. Last year all seemed satisfied with the results of the earlier spring months. This year there can be but few exceptions where the Hardware jobber and retailer are not equally contented with the results. Prices are very low, but there now seems to be a limit to the cutting of prices. This condition is not only gratifying to the jobber, but to the retailer also. Experience demonstrates the fact that all classes of trade are better satisfied with a steady market than with one that has no bottom. No one likes to have their purchases deteriorate on their hands. Any effort among manufacturers to maintain a steady market price for their goods should meet with the hearty support of every one; but when two manufacturers controlling an article of universal consumption have a petty quarrel, and one of them prints a circular quoting prices at a less figure than he is willing to sell, and distributes these prices broadcast, it is time to call a halt. The following is a copy of a telegram received in response to an order to this manufacturer at his own quotations: “Working only half time. Cannot ship promptly unless inducement to work extra time. How much more can you pay?” In view of this manufacturer having established a selling price for his goods, what protection have the trade from his quotations, and how can they explain it to their customers? The steady advance in Manila Cordage is stimulating sales; \$1.50 for Wire Cloth is now being mentioned, with a prospect of a higher price. The manufacturers of Wire and Cut Nails are trying to maintain a higher price on account of the coal strike. This may be done temporarily, but a settlement of the strike will be likely to result in lower prices. The market price from store is now \$1.25, base, with a prospect of \$1.30 in the near future. Lawn Mowers and other seasonable goods are selling freely.

Philadelphia.

SUPPLEE HARDWARE COMPANY.—Whatever changes have taken place in trade circles since our last letter may be looked upon as on the line of improvement.

Quite a number of permits have been taken out for building contracts in our city, which, unless uneasiness on the part of workmen demanding a resumption of business on their old basis of wages intervenes, are likely to be executed in buildings during the present season.

There is considerable capital lying idle which during the last eight months has brought in no revenue, and people are looking around for this return of revenue, and are not inclined to place their money in any new manufacturing enterprises, and those persons engaged in manufacturing enterprises, so long as their industries are closed or partially closed, are not likely to need their full amount of capital in their business, hence are looking outside for investments on a substantial basis instead of investing in stocks.

It would seem quite remarkable that so few changes have taken place in the prices of Hardware, and the question can only be solved by the low prices that have been reached during the last few years.

Season goods continue active, the summer weather having caused a quick demand, which still continues. Collections continue fair.

San Francisco.

MILLER, SLOSS & SCOTT.—In your number of April 26 under the heading "San Francisco News," some unknown correspondent furnishes information, among other things, of the freight situation in our city. He states that with the retirement of the North American Navigation Company, who have been the chief opposition to our only through transcontinental railroad, overland freights had been immediately advanced. This advance, he states, ranges from 20 to 50 per cent.

It is true, as he states, that the freight question is a very important one to San Francisco merchants. As a matter of fact the retirement of the North American Navigation Company has had absolutely no influence on freight matters. Their position has been immediately assumed by the Panama Railroad Company on their own account, and the rates advertised are the same as those formerly named by the North American Navigation Company. As to the advance in rail rates, we find quite the opposite to have been the case. The Southern Pacific Company being the only through transcontinental road running into San Francisco, naturally felt that the organization of the North American Navigation Company was a direct opposition to them, and they immediately fixed their tariff so as to compete with the rates named by their competitors. Other railroads who had been in former years doing considerable business over their lines in San Francisco freight did not co-operate in this fight against the steamship company. The consequence was they found shipments from as far west as the Mississippi River being consigned to San Francisco via New York. In order to regain the business they had in this way lost, they recently and about the time of the retirement of the North American Navigation Company advertised their rates to have been reduced so that shipment from Chicago, St. Louis and common points could be made over their lines at the same rates as the Southern Pacific Company were naming from New York.

We have given you above the exact situation of freight matters at present, and you will readily see that the San Francisco merchant still has the advantage in freight that our position on the sea coast should give him, not only through shipments by steamer via Panama, but also by sailing vessel around the Horn.

We mentioned in our last the probable result of the dry weather to our crops. When that letter was written we had just had a very slight rain, with predictions for more, so that our farming community felt more hopeful than they had. The predictions did not hold good, and we have had no more rain. The season is now so far advanced that it will be safe for us to calculate that our dry season has set in and that we shall have no further rain until September or October. In some sections of our State the rainfall during the past season has been exceedingly small, and there is slight prospect of crops. In fact, we learn that in many places there will absolutely be nothing to harvest. Through

irrigation our fruit people expect to do better, and we understand that we can look for good returns for fruit on account of the damage done to the Eastern crops.

The prospect for business is no better than it has been, but we find it to be a usual thing for the farmer to growl at this time of the year, and we hope that matters will turn out better than they now give us reason to believe. With all the bad times that we have had, and with prospect of a continuance of them, we find collections to be fully up to other years at this season. Our country merchants claim to be buying only what they absolutely need, so that we think they should be in a position, even with small crops, to meet their bills with fair regularity.

Notes on Prices.

Wire Nails.—Owing to a variety of influences the Wire Nail market is in a perceptibly stronger position than at our last review, and higher prices are ruling. This is owing in part to the effect of strikes, which have either stopped or diminished the output of some of the mills, with a strong probability that still others will be similarly affected. There is also something of a quickening of the demand, which comes principally from the smaller trade buying in lots of one or two carloads, but at the same time it is understood that some of the large houses are in the market and will probably soon be obliged to replenish their stocks. The condition in the raw material also tends to stiffen the price. Under these conditions quotations for carload lots at mill are now \$1 to \$1.10, some mills refusing to sell at less than the latter figure. The price from other manufacturers is \$1.05, but \$1 is still obtainable. The market has a firmer tone, and it would not be surprising if a further advance were made, unless there is an early settlement of the labor difficulties. Small lots from store in New York are still quoted at \$1.15 to \$1.25.

Oliver & Roberts Wire Company and Oliver Iron & Steel Company, Pittsburgh, issue a joint circular under date May 11, in which they state that the report that their works were stopped on account of the coal strike is without foundation. They announce that they have provided themselves with an ample supply of fuel, which is sufficient to run their respective works during the next 30 days. They are therefore in a position to give prompt attention to the orders of the trade.

Chicago, by Telegraph.—The situation has now changed very decidedly in favor of manufacturers. Buyers can no longer dictate prices, but a firm basis has been established, with an advance of at least 10 cents per keg above the low rates prevalent some two weeks since. Factory lots are quoted at close to \$1.10, Chicago. The manufacturers are very hopeful of advancing prices a little higher, believing that the market has recovered from its depression and that such an advance will be sustained. They are encouraged in this belief by

an improvement in the demand during the past week, including inquiries from large buyers who had been supposed to be well stocked. Jobbers quote small lots at \$1.15, but report a rather light movement.

Cut Nails.—There has been little change in the Cut Nail market, but the effect of the strikes is perceptible, especially as manufacturers are indisposed to solicit business as eagerly as heretofore or to make concessions to induce orders. The factory price of Western Nails is about 90 cents, but concessions are made from this figure, especially with a view to placing Nails in Eastern territory. This, during the past few weeks, had the effect of forcing down somewhat the price of the Eastern manufacturers, who were thus enabled in large measure to hold their trade. The Eastern mills are quoting 95 cents to \$1 base for Nails delivered on dock in New York, their quotations for other points being based on a price at from 85 to 90 cents at mill. Small lots from store in New York are held at \$1.10 to \$1.15.

Chicago, by Telegraph.—A nice run of orders is reported by Cut Nail manufacturers. They are selling for present delivery at the old price of 95 cents, Chicago, for 55-cent average, but will not enter contracts for future delivery, believing that prices will shortly advance on account of the scarcity of coal, as well as the expected restoration of freight rates to the East to their old figure. Small lots from stock are being sold by jobbers at \$1.05 to \$1.10.

Barb Wire.—The demand for Barb Wire continues fair, and the market is given a somewhat firmer tone in view of the effect of the strikes and the difficulty which is already experienced in operating plants. The advance in raw material also has its influence. On the other hand, trade is naturally diminished in volume and manufacturers are desirous of obtaining such orders as are in reach. Quotations for Four-Point Galvanized are as follows, delivered at the points named: Pittsburgh, \$2.05 to \$2.15; Cleveland, \$2.10 to \$2.20; Cincinnati or Allentown, \$2.15 to \$2.25; Chicago or New York, \$2.20 to \$2.30.

Chicago, by Telegraph.—The manufacturers of ordinary Barb Wire in this vicinity have not yet entirely caught up with business entered some time since and consequently are firmly maintaining prices. The scarcity of fuel and the advance in Billets they insist will compel them to ask advanced rates on new business, but at the same time a little weakness has developed among manufacturers of special brands, which is somewhat disquieting, but may only be temporary. The break in freight rates to the far West has developed a very fair demand for all kinds of Wire products and large consignments are now being made daily to the Pacific Coast and intermediate points. Jobbers are

having an excellent demand for Barb Wire from stock, which continues without any relation to the demand for Wire Nails. Quotations for small lots from stock are \$2.30 to \$2.35, and \$2.20 for shipments from factory.

Augers and Bits.—We are advised by the Snell Mfg. Company, 72 Reade street, New York, that they withdrew from the Auger and Bit Association 12th inst., and will hereafter make their own prices upon all goods of their manufacture.

Wire Cloth.—The trade are experiencing something of a scarcity in Screen Wire Cloth, and as a result prices are higher with such manufacturers or jobbers as have a supply on hand.

Apple Parers.—During the coming season Apple Parers will probably sell at prices not materially different from those which ruled last year, but there is an apparent tendency toward somewhat lower figures. The revised quotations of Reading Hardware Company, Reading, Pa., for the season of 1894 are as follows:

	Per doz
Reading, '72.....	\$3.75
Baldwin.....	4.5
Advance.....	4.25
Reading, '78.....	6.75

Little Giant Steel Truck.—The Little Giant Steel Truck, put on the market by the G. L. Van Namee Mfg. Company, Syracuse, N. Y., and illustrated in our last issue, is sold to the trade at \$24 per dozen, net.

Golden Crown Asparagus and Corn Cooker.—A description of this article appeared in our last issue. It is put on the market by the Stuart & Peterson Company, Burlington, N. J., by whom it is sold at \$1.40 for the No. 1 \$1.60 for the No. 2, and \$2 for the No. 3, these prices being subject to a discount of 40 per cent. to the trade.

Fresh Air Inlet and Hitching Post.—Edward M. Stirling, 85 Market street, Newark, N. J., is manufacturing this article, which was illustrated in our last issue. It is sold to the trade at \$12, less a discount of 30 per cent.

Goodell's Hand Drill No. 4.—H. H. Mayhew Company, Shelburne Falls, Mass., are selling their Goodell's Hand Drill No. 4, which was described in *The Iron Age* May 3, to the trade at \$14.25 per dozen, net.

Devore's Bicycle Specialties.—L. M. Devore & Co., Freeport, Ill., who are putting on the market the Bicycle Saddle and Stand described in *The Iron Age* May 3, are selling the Saddle to the trade at \$2.25 each, and the Stand at \$1.25 for the plain white plate and \$2 for the full bright nickel.

Frazer Axle Grease.—The following is the price-list of the Frazer Lubricator Company, 83 Murray street, New York, terms net, f.o.b. New York:

	Per gross.
Small wood boxes, gross lots.....	\$9.50
Small wood boxes, half gross lots.....	10.00
	Per dozen.
Five-pound wood boxes, with bails.....	\$3.25

Ten-pound wood boxes, with bails.....	6.00
Small tins, with bails.....	1.37½
Medium tins, with bails.....	2.75
Large tins, with bails.....	4.50

Bulk.

	Per pound.	Cents.
Wood pails, 15, 25 and 32 pounds.....	5	
Tubs, 36 and 71 pounds.....	4	
Kegs, 112 pounds.....	3½	
Half barrels, 225 to 250 pounds.....	3½	
Barrels, 400 to 475 pounds.....	3½	

Diamond X.

	Per gross.
Small wood boxes.....	\$7.00
Small tins, with bails.....	14.00

Sheet Zinc.—A revised discount sheet under date May 10 has been issued by Matthiessen & Hegeler Zinc Company, La Salle, Ill. The base price, \$4.50 per 100 pounds, remains unchanged, but revised discounts are announced as follows:

Discounts.	First class. 15 600-pound casks and up- ward.	Second class. 10 to 14 600- pound casks.	Third class. 5 to 9 600-pound casks.	Fourth class. Under 5 600- pound casks.
	Per cent.	Percent.	Per cent.	Percent.
Special.....	9	9	9	9
Cash with order.....	3	3	3	3
Quantity.....	3	2	1	0
Totals.....	15	14	13	12

Covert Mfg. Company.—The following is the revised discount sheet of the Covert Mfg. Company's, West Troy, N. Y., terms:

	Per cent. discount.
Balling Irons, No. 549, \$3.75 doz.....	35
Boot, Interfering.....	35
Doz.....\$4.00 4.00 4.00 4.00	
Nos..... 401 403 405 407	
Doz.....\$4.00 4.00 4.00	
Nos..... 409 411 413	

Breast Chains.

Short Snaps.....	50 and 10
Doz. pr.....\$14.00 16.00 18.00	
Nos..... 200 204 206	
Doz. pr.....\$20.00 22.00 24.00	
Nos..... 208 250 251	
Giant.....	50
Doz. pr.....\$24.00 28.00 32.00	
Nos..... 284 285 286	
New Patent.....	50
Doz. pr.....\$16.00 18.00 20.00	
Nos..... 218 220 222	
Doz. pr.....\$22.00 24.00 26.00	
Nos..... 217 219 221	
Bull Leads, No. 236, \$7.00 doz.....	35

Cattle Ties.

Jute, Snap and Thimble, No. 524, \$4.00 doz.....	70 and 10
Jute, O. K., No. 114, \$4.00 doz.....	70 and 10
Hemp, No. 78, \$5.50 doz.....	50 and 10

Chains.

Breeching, No. 268, \$0.20 pr.....	35
Halter.....	60
Doz.....\$8.00 10.00	
Nos..... 232 234	
Heel.....	50
Post, No. 254, \$6.00 doz.....	60 and 20
Rein.....	60 and 20
Doz.....\$2.60 3.50 4.50 6.50	
Nos..... 244 246 248 249	
Stallion, No. 256, \$4.00 doz.....	35
End Irons, Cart Breech, No. 261, 3 in., \$0.64, and No. 263, 3½ in., \$0.72 doz.....	35
Girth, Web.....	35
Doz.....\$3.90 4.25 4.20 4.65 4.85 5.40	
Nos..... 430 431 432 433 434 435	

Halters.

Hemp Rope, No. 86, \$5.50 doz.....	35 and 5
Jute " ½ in., No. 90, \$3.25 doz.....	60, 10 and 10
" " 7-16 in., No. 88, \$2.80 doz.....	70
Combination Adjustable.....	35 and 5
Gro.....\$38.30 39.30	
Nos..... 81 83	

Web.....	35 and 5
Gro.....\$42.00 42.00	
Nos..... 84 85	
Web Adjustable.....	35 and 5
Gro.....\$46.00 52.00 48.00 56.00 52.00	
Nos..... 149 150 152 157 154	
Rope, Adjustable, Jute, Nos. 302, 7-16 in., \$2.30, and 304, ½ in., \$2.60 doz.....	40 and 10
Rope, Adjustable, Hemp, No. 310, ½ in., \$6.00 doz.....	40
Rope, Adjustable, Sisal, Nos. 306, 7-16 in., \$3.50, and 308, ½ in., \$4.50 doz.....	40
Rope, Grazing, Manila, No. 328, 7-16 in., \$3.00 doz.....	35
Rope, Grazing, Jute, Nos. 329, ½ in., \$2.00, and 330, 7-16 in., \$1.85 doz.....	35

Halter Leads.

Hemp, Nos. 120, \$4.00, and 130, ½ in., \$3.25 doz.....	50 and 10
Jute, with Snap, Nos. 530, ½ in., \$3.00, and 531, 7-16 in., \$2.50 doz.....	75
Jute, ¾, Nos. 532, \$20.00, and 533, \$15.00 gro.....	60 and 20
Jute, with Ring, Nos. 132, ½ in., \$2.25, and 133, 7-16 in., \$2.00 doz.....	70 and 10
Cotton, No. 604, ½ in., \$4.60 doz.....	40 and 10

Hammock Ropes.

Jute, No. 270, 7-16 in., \$4.00 doz.....	60 and 20
Manila, No. 276, ¾ in., \$4.25 doz.....	60 and 20

Hitching Cord.

Black Braided Cotton, No. 186, \$6.00 doz.....	35
White Cotton, No. 187, \$2.50 doz.....	35
Hitching Post, Nos. 550, \$54.00, and 551, \$40.00 doz.....	35
Hitching Weight.....	50
Doz.....\$9.50 12.50 15.60	
Nos..... 180 181 182	
Pounds..... 15 20 25	
Hook, Safety Gate, Nos. 34, 4 in., \$13.00, and 35, 6 in., \$17.00 gro.....	60 and 20

Horse Ties.

Jute, two Snaps and Thimbles, No. 525, \$6.00 doz.....	70
Jute, one Snap and Thimble, No. 526, \$4.50 doz.....	70
Hemp, two Snaps and Thimble, No. 66, \$8.00 doz.....	50 and 10
Hemp, one Snap and Thimble, No. 68, \$6.00 doz.....	50 and 10
Jute, O. K., No. 104, \$6.00 doz.....	70
Web, No. 55, \$6.00 doz.....	50
Cotton, two Snaps and Thimbles, No. 600, \$8.25 doz.....	40 and 10
Cotton, one Snap and Thimble, No. 602, \$7.25 doz.....	40 and 10

Irons.

Balling, No. 549, \$3.75 doz.....	35
End Cart Breech, Nos. 261, 3 in., \$0.64, and 263, 3½ in., \$0.72 doz.....	35
Interfering Boot.....	35
Doz.....\$4.00 4.00 4.00 4.00	
Nos..... 401 403 405 407	
Doz.....\$4.00 4.00 4.00	
Nos..... 409 411 413	

Jacks.

Emons Wagon Jack, No. 555, \$9.60 doz.....	35
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Lariat Tethers.

Manila, No. 146, \$18.00 doz.....	50 and 10
Jute, No. 148, \$12.00 doz.....	50 and 10
Picket Pins, No. 156, \$2.00 doz.....	50 and 10
Post, Hitching, Nos. 550, \$54.00, and 551, \$40.00 doz.....	35
Pants Stretcher, \$12.00 doz. pr.....	60
Rod Post Hitcher, No. 260, \$6.00 doz.....	60 and 20

Snaps.

Bull, No. 238, \$3.00 doz.....	35
Center Breast Chain, No. 223, \$4.00 doz.....	35
Double.....	50
Gro.....\$10.00 12.00 15.00	
Nos..... 510 511 512	
Harness Loop, Old Pattern.....	50
Gro.....\$5.50 5.90 6.60 6.90 9.20	
Nos..... 2 4 6 8 10	

Gro....	\$10.50	11.60	12.90	13.90
Nos....	12	14	16	18
Harness Loop, New Pattern. 50 and 10 and 5				
Gro....	\$5.00	5.20	5.50	5.80
Nos....	500	501	502	503
Gro....	\$9.50	10.50	11.50	13.00
Nos....	505	506	507	508
Lengthening, R. E., No. 38, \$16.00 gro....				
		50	10 and 5	
Lengthening Giant, R. E., No. 7, \$2.50 doz....				35
Martingale Loop.....				50
Gro.....	\$15.00		16.00	
Nos.....	49		51	
Open Eye, Old Pattern.....		60, 10 and 5		
Gro.....	\$12.00	13.00	19.00	
Nos.....	44	46	48	
Open Eye, New Pattern.....		50, 10 and 5		
Gro.....	\$6.00	8.00	11.00	
Nos.....	520	521	522	
Open Eye, Giant, No. 5, \$2.50 doz.....				35
Round Eye, Old Pattern.....				70
Gro.....	\$11.00	12.00	14.00	11.00
Nos.....	26	28	30	32
Round Eye, New Pattern.....		60, 10 and 5		
Gro.....	\$8.00		8.00	
Nos.....		515	516	
Inch.....		1/2	3/4	
Round Eye, Giant, No. 7, \$2.50 doz.....				35
Round Eye, Trace, No. 38, \$16.00 gro....				
		50, 10 and 5		
Swivel Loop.....				60
Gro.....	\$16.00	17.00	18.00	
Nos.....	37	39	41	
Gro.....	\$19.00	20.00	21.00	
Nos.....	42	43	45	
Swivel, No. 50, R. E., \$13.00 gro.....				
		60, 10 and 5		
Swivel, No. 40, R. E., \$18.00 gro.....				
		60, 10 and 5		
Swivel, No. 9, R. E., 1/2 in., \$19.00 gro....				
		60, 10 and 5		
Swivel, Heavy, R. E., 1 in., No. 3, \$24.00 gro....				
		60 and 5		
Yankee Loop (Steel Spring).....				35
Gro.....	\$2.20	2.40	2.40	
Nos.....	450	451	452	
Yankee Loop (Steel Spring).....				35
Gro.....	\$2.40	2.70	4.20	
Nos.....	453	454	455	
Gro.....	\$5.50	7.00	8.00	
Nos.....	456	457	458	
Yankee Round Eye (Steel Spring), No. 460, 1/2 in., \$3.20 gro., and No. 461, 3/4 in., \$4.00 gro....				35
Snap and Thimbles.....				70
Gro.....	\$24.60		26.00	
Nos.....	58		60	
Snap and Thimbles, New.....				70
Gro.....	\$19.60		21.60	
Nos.....	280		282	
Soldering Coppers.....				35
Doz.....	\$3.10	4.30	5.10	
Nos.....	380	382	384	
Doz.....	7.00	8.20		
Nos.....	386	388		
Soldering Irons.....				35
Doz.....	\$5.20	6.25	7.50	
Nos.....	350	352	354	
Doz.....	\$9.50	10.75		
Nos.....	356	358		
Strap Eyes, No. 56, \$6.00 gro.....				50
Safety Gate Hook, No. 34, 4 in., \$13.00 gro., and No. 35, 6 in., \$17.00 gro....				
		60 and 20		
Thimbles, No. 62, 1/2 in., \$10.20 gro., and No. 64, 3/4 in., \$12.00 gro....				70
Tuck Loops (Wire).....				35
Gro.....	\$0.20	0.24	0.27	
Nos.....	651	652	653	
Gro.....	\$0.31	0.37	0.43	
Nos.....	654	655	656	
Gro.....	\$0.53	0.58	0.68	
Nos.....	657	658	659	
Web Girth.....				35
Doz.....	\$3.90	4.25	4.20	
Nos.....	430	431	432	
Doz.....	\$4.65	4.85	5.40	
Nos.....	433	434	435	
Weight Cord, No. 176, 8 ft., \$5.00 doz., and No. 178, 11 ft., \$6.00 doz.....				35
Weight, Hitching.....				50
Doz.....	\$9.50	12.50	15.60	
Nos.....	180	181	182	
Pounds.....	15	20	25	

Glass.—A more active demand for Window Glass is reported from the West than in the East, local trade showing somewhat of a falling off within

the past week or two. Firmer prices, the nearer approach to the time for the annual shut down of factories and the apprehension of a shortage of Glass during the summer months, have caused some factories hitherto idle to start up. In the neighborhood of 125 pots are reported as having gone into operation during the past week, which makes the total number of pots or their equivalent in operation 1262, or a little over two-thirds of the country's capacity. This is the largest number of pots in operation at any time during the present fire. Pittsburgh factory quotations are reported as being 85 per cent. discount for single and 85 and 5 per cent. discount for double strength Glass, while manufacturers generally show a disposition to maintain rather than to cut these prices. The discounts given fairly represent the market at large, with possibly concessions in some instances reducing prices to 85 and 5 per cent. discount for single and 85 and 10 per cent. discount for double strength Glass. French Window Glass is still quoted at 70 and 10 per cent. discount. Plate Glass is in somewhat greater demand, with prices ranging from 70 and 5 to 70 and 10 per cent. discount.

New England Retail Hardware Dealers' Association.

THE NEW ENGLAND Retail Hardware Dealers' Association enjoyed a dinner on the 9th inst. at the United States Hotel, Boston. About 70 members of the association were present. President Samuel H. Thompson presided at the dinner. The special guest of the evening was Col. Henry A. Thomas, private secretary to Governor Greenhalge of Massachusetts. Col. Thomas delivered a stirring and patriotic address, which was received by those present with much enthusiasm. Speeches were also made by several of the members of the association. An entertainment followed the dinner, the contributors being George B. Dexter, humorist; W. L. Floyd, prestidigitateur, and Miss Mamie M. Fuller, second sight artist.

Export Notes.

THE EFFECT of the depression in business in Melbourne, Australia, is indicated in the fact that the city has lost by emigration during the 18 months previous to July, 1894, over 40,000 people, who have been forced to seek other points in order to earn a livelihood.

It is understood that several of the leading Hardware houses in Melbourne have been considering the feasibility of consolidating their interests, and we are advised that something in this direction is likely to be consummated before long. There are nine wholesale Hardware houses in the city who are soliciting the trade of a population of 1,225,000, and the trade will doubtless be well served even though one or two should drop out.

Other Australian cities have not fared so badly as Melbourne. Brisbane is referred to as in a prosperous con-

dition, their exports being double their imports.

New Zealand continues to prosper, having apparently entirely recovered from the depression or disturbance of four or five years ago.

The gold fields of Western Australia are attracting great crowds from Melbourne and Sydney, 7000 people having left these two points during the month of March. If they will only make a success Melbourne and Sydney will be enriched thereby, for all the supplies virtually have to come from these cities.

The following occurrence, related to a representative of *The Iron Age* by the Hon. John R. G. Pitkin, for four years United States Minister to the Argentine Republic, is retold to emphasize the point that there is a wider market for many of our goods abroad if intelligently and persistently pushed. While in Buenos Ayres an American resident there went into an establishment where he was well known, accompanied by an *estanciero* or ranchman friend who wished to purchase a Pistol. Knowing how many of our goods are closely imitated abroad, he said to the salesman, "No humbug now; sell him a reliable article." Two Revolvers were taken from the showcase and offered for examination and inspection, both identical in appearance regarding size, design, finish, trade-mark, &c. The genuine article was American made. Its companion had been cleverly imitated in Germany, trade-mark and all. The *fac-simile* was offered at a substantial reduction in price, and the points of each explained. As both seemed to be about the same quality to an inexperienced observer, the cheaper Fire Arm was bought. Eight days later the same individual, minus about 1 inch of one of his thumbs, came back and took the American Pistol. The counterfeit article had persisted in going off at the wrong end.

D. G. Holmes of W. E. Peck & Co., exporters, 64 William street, New York, has recently returned from a four weeks' rail trip to Mexico, where he went to arrange an agency in Puebla for the sale of American Agricultural and Industrial Machinery. Commenting on the development of that country in the past few years, he stated that the actual time consumed in getting from New York to Mexico City was 4 days and 16 hours. Pullman cars throughout, and changes only at New Orleans and Laredo. Not many years ago it would have involved an ocean or gulf trip. While at present the Germans have the bulk of the trade there, he believes that in a few years the conditions will be reversed in our favor.

Thomas Cooper, of English birth but who has lived some years in Australia, selling manufactured goods in the various colonies for importing houses there, is here on a second visit to this country. His former trip was made last year to see the Columbian Exposition. He is spending his time principally among manufacturers, seeking to represent their goods in that country. He will return some time in June next and make his headquarters in Melbourne.

N. P. HAYES, a well-known and enterprising Hardware merchant of New Bedford, Mass., has issued an invitation to the three local G. A. R. posts to participate in a flag raising at his store on May 22, to be followed by an entertainment in the opera house, which will be provided by Mr. Hayes. The unfurling of a flag on a

private building by G. A. R. men is referred to as something new in that section.

Southern Hardware Jobbers' Association.

THROUGH the courtesy of the president and secretary of the Southern Hardware Jobbers' Association we are permitted to lay before our readers the full programme of the meeting which is to be held at Richmond, June 5, 6 and 7. It will be seen that careful preparations are being made to render the meeting one of especial interest. The subjects to be considered, it will be observed, are practical and comprehensive and touch many matters of vital importance to the trade. The general scope of the gathering is referred to in the following letter from A. D. Langstaff, president of the association:

The principal subjects that are to be considered by the convention have already been determined, beginning with the manufacturer, as from him we derive our supplies; next, the salesman, who for us disposes of the products of the factories; then, the terms on which they are sold, &c.

Each member has had one or more subjects assigned to him, and is now preparing reports on them to be submitted to his committee in Richmond, the consensus of which will be presented to the association in general session.

Letters recently received, in answer to the circulars sent each member relating to the subjects, indicate that the meeting will be attended by every member and that beneficial results will no doubt ensue.

In addition to the manufacturers, representatives from the other Hardware associations in the United States, and from trade and other journals, and from prominent Hardware houses in cities other than those comprised in the association, will be invited.

The banquet, with the usual "flow of soul," will on the evening of the last day follow the "feast of reason" that may have happened on preceding days.

Men prominent in national, State and municipal affairs, and those to whom invitations have been extended, as mentioned in this letter, will be our guests at the banquet.

The meeting will undoubtedly result beneficially. We expect that the banquet will be so enjoyable that the most friendly recollections will follow it.

The following summary of the subjects which are to be considered by the association and the names of the chairmen of the different committees, with information in regard to the scope of the discussion, will be of interest:

SUBJECT: "Manufacturers."

Chairman of Committee:

JNO. M. GRAY of firm Gray, Fall & Co., Nashville, Tenn.

This committee is composed of one member from each city in the South. Its object is to provide for a personal acquaintance between all the members of the association and the officers of corporations or members of firms, the products of whose factories are distributed by Southern jobbers.

These parties will be invited to the meeting at Richmond to a friendly conference relative to improving the present methods of handling said products.

This committee will be subdivided so that each line of goods will have a separate committee.

SUBJECT: "Payment of Salaries to Traveling Salesmen."

Chairman of Committee:

JNO. S. BROWN of firm of Geo. Brown, Knoxville, Tenn.

This committee is composed of members who may not be on Manufacturers' Committee. Its object is to devise plans of equitable payment of salaries, dependent upon net profits realized from sales, in lieu of present stipulated salaries and attendant expenses, without regard to net profits.

SUBJECT: "Terms on which Goods Are Sold, &c."

Selling Goods in Spring and Extending Payment to Fall.

Chairman of Committee:

Ex-PRES'T W. E. GIBBINS of firm of W. W. Woodruff & Co., Knoxville, Tenn.

This committee is composed of one member from each city.

Its object is to adopt uniform terms upon which to sell goods; to eliminate the present excessive time given by some houses, by making time not longer than 60 days.

It has been realized that long time and short profits are not conducive to satisfactory results.

SUBJECT: "Trade Associations."

Chairman of Committee:

MAJOR EDWARD BUFORD of firm of Buford Bros., Nashville, Tenn.

This committee is composed of members from cities where local associations exist.

Its object is to place before the association exhaustive reasons that kindlier feelings for competitors and pecuniary benefits have followed from frequent friendly conference.

SUBJECT: "Credits and Their Applications."

Chairman of Committee:

N. A. GLADDING, Manager E. C. Atkins & Co., Memphis, Tenn.

This committee is composed of members who are the credit men of firms in various cities.

They will present to the association, through their committee, brief reports of their daily experiences on above subject and some of the results.

SUBJECT: "Syndicate Buyers—Their Connections and Methods of Business."

Chairman of Committee:

J. J. MANDLEBAUM, Secretary Fones Bros. Hardware Company, Little Rock, Ark.

This committee is composed of members whose firms employ syndicate buyers.

Its object is to present a report to the association which will contemplate the correction of the misuse of quotations and other questions.

The influential position occupied by the association and the extent of territory which it covers are indicated in the names of the members and officers which we give below,

Officers.

A. D. LANGSTAFF, president.

W. A. CHENOWETH, first vice-president.

W. A. GREGG, second vice-president.

J. C. VANCE, treasurer.

W. P. SMITH, secretary.

Executive Committee.

A. D. LANGSTAFF, Memphis, Tenn.

J. C. VANCE, Chattanooga, Tenn.

J. J. WESCOAT, Charleston, S. C.

W. A. CHENOWETH, Birmingham, Ala.

C. F. HUHLEIN, Louisville, Ky.

C. H. IRELAND, Greensboro, N. C.

W. A. GREGG, Atlanta, Ga.

C. H. WATKINS, Richmond, Va.

LEE RICHARDSON, JR., Vicksburg, Miss.

J. J. MANDLEBAUM, Little Rock, Ark.

W. P. SMITH, Knoxville, Tenn.

Members.

Gray, Fall & Co., Nashville, Tenn.

Dudley Bros. & Black, Nashville, Tenn.

Bransford Hardware Company, Nashville, Tenn.

J. H. Fall & Co., Nashville, Tenn.

Buford Bros., Nashville, Tenn.

H. G. Lipscomb & Co., Nashville, Tenn.

A. M. Tenison & Son, Nashville, Tenn.

Orgill Bros & Co., Memphis, Tenn.

Langstaff Hardware Company, Memphis, Tenn.

E. C. Atkins & Co., Memphis, Tenn.

Vance & Kirby, Chattanooga, Tenn.

Carter-Magill Hardware Company, Chattanooga, Tenn.

Green & Caldwell, Chattanooga, Tenn.

E. C. Atkins & Co., Chattanooga, Tenn.

W. W. Woodruff & Co., Knoxville, Tenn.

C. M. McClung & Co., Knoxville, Tenn.

George Brown, Knoxville, Tenn.

S. B. Luttrell & Co., Knoxville, Tenn.

Watters & Martin, Norfolk, Va.

Charles Leonard, Petersburg, Va.

Cottrell, Watkins & Co., Richmond, Va.

Watkins Hardware Company, Richmond, Va.

Donnan & Cannon, Richmond, Va.

Bell, Barker & Jennings, Lynchburg, Va.

Clark, Ainslie & Co., Lynchburg, Va.

Christian, Beasley & Co., Lynchburg, Va.

J. M. Shafer, Lynchburg, Va.

Martin & Ganaway, Lynchburg, Va.

Beck & Gregg Hardware Company, Atlanta, Ga.

Clark Hardware Company, Atlanta, Ga.

Kirkpatrick Hardware Company, Atlanta, Ga.

King Hardware Company, Atlanta, Ga.

Southern Agricultural Works, Atlanta, Ga.

Rome Hardware Company, Rome, Ga.

Towers & Sullivan Mfg. Company, Rome, Ga.

Macon Agricultural Works, Macon, Ga.

Dunlap Hardware Company, Macon, Ga.

Frazier & Dozier, Columbus, Ga.

Southern Plow Company, Columbus, Ga.

Athens Hardware Company, Athens, Ga.

Moore & Handley Hardware Company, Birmingham, Ala.

Francis-Chenoweth Hardware Company, Birmingham, Ala.

May-Thomas Hardware Company, Birmingham, Ala.

Milner & Kettig Company, Birmingham, Ala.

Anniston Hardware Company, Anniston, Ala.

Barney-Cavanaugh Hardware Company, Mobile, Ala.

Cunningham Hardware Company, Mobile, Ala.

Teague, Barnett & Co., Montgomery, Ala.

Teague & Sons, Montgomery, Ala.

D. M. Snow & Co., Montgomery, Ala.

Giles & Murchison, Wilmington, N. C.

Odell Hardware Company, Greensboro, N. C.

Brown, Weddington & Co., Charlotte, N. C.

Marshall, Wescoat & Co., Charleston, S. C.
 Fones Bros. Hardware Company, Little Rock, Ark.
 Dickinson Hardware Company, Little Rock, Ark.
 Foster Hardware Company, Little Rock, Ark.
 B. F. Avery & Sons, Louisville, Ky.
 Lee Richardson & Co., Vicksburg, Miss.

The Relations Between Manufacturers and Jobbers.

BY WILLIAM W. SUPPLEE.

AN INTERESTING and able paper on the relations between manufacturers and jobbers and between jobbers themselves was presented by William W. Supplee at a meeting of the Hardware Merchants and Manufacturers' Association of Philadelphia. The pressure on our space makes it necessary to defer to another issue the discussion as to the relations between the jobbers themselves, on the first part of the subject Mr. Supplee speaking as follows:

"Referring to the first portion of the title 'The Relation Between Manufacturers and Jobbers,' I know of no reason why that relation should not be of the most cordial and intimate character, and we have positive evidence that they may and can be, as is shown from our own experience in this association, where we meet together monthly pleasantly and harmoniously, and look upon the interests of one as identical with the other. Were this not the case, how would it be possible for an association like ours to exist? Otherwise there would be not only clashing of ideas, but heated discussions, personal recrimination and ill feeling.

The manufacturer depends largely upon the jobber to distribute his goods, and it would be hazardous for any manufacturer to act upon the principle that he did not care for the co-operation of the jobber. It would be a bold manufacturer, even of established reputation, who would attempt it, and it would be suicidal for any new manufacturer entering the field to advocate it.

We have all heard manufacturers occasionally say, 'I propose to introduce my goods by broadly advertising and sending price-lists to the general Hardware trade, thus showing the advantages of my goods over other similar goods.' Now, if he alone depends upon this it will depend only upon the size of his bank account as to how soon he will discover how many of his price-lists are consigned to the waste basket, or how many advertisements have been passed unnoticed.

The poorest article, made by the most illiterate of men, can secure the services of a person who will get up an attractive price-list and well worded advertisement for a very small sum. Having made these investments and his course failed to bring the anticipated orders, he then proposes to canvass the retailers. While pursuing this work he will soon become familiar with the stereotyped remark, 'Well, we do not need any now, nor could we buy enough to make a shipment alone. We will keep your price-list before us for reference when we have call for them.'

It would not be proper to base our opinion upon isolated cases, where patented articles have been placed upon the market, where the profit is large, and consequently will permit large expenditures upon small sales, but what is known as goods in the general Hardware line, where competition compels judicious management of business.

I can, perhaps, better explain my

position by illustrations, although in this I have had some hesitation, from the fact that our association embraces members who have a well earned reputation, which is not only national in character, but world wide in business relations; consequently some of the names that would naturally be used, not only in this association, but before any other association, with credit to themselves in the selection; therefore I feel that I may be permitted to touch personally upon the business of some of our members.

Take the name of Henry Disston & Sons. The founder of this firm began his business as an excellent mechanic, without means, local reputation or friends. The few Saws he could then make, with his slender means, were delivered by himself after his week's work was done. Tell me how he could ever have established a reputation, in competition with his then formidable competitors, Spear & Jackson, without the co-operation of the jobber. Indeed, it has only been in recent years that their representatives have gone to any Hardware houses outside of the largest jobbers in the country.

American made Screws, even though the profits originally, as made known later, appeared almost fabulous, and would have permitted almost any amount of cash outlay to introduce the American made Screw over the clumsy English Screw then upon the market. They then depended upon the jobbers entirely to market their production.

Indeed, one could go over almost the entire list of successful manufacturers and find they have depended upon the jobber to first introduce and sell their goods, as not only the cheapest and most feasible, but the quickest and most successful plan to dispose of their production. The custom, as originally inaugurated by these manufacturers, was to have an established price for what is known as the general Hardware trade, at which price they gave the jobber to understand he would be able to sell the goods, and below which price they would make a special discount to the largest jobbing trade, as an inducement to give their orders early in the season, and to carry their line of goods in sufficiently large quantities to supply the demand for orders secured by them later in the season, thus relieving manufacturers of the expense incident to placing the goods with the smaller houses, which expense falls heavily upon the jobbers, and who in any event are poorly paid between the manufacturers' established price and the extra discount given to those who buy thousands of dollars over and above those who buy one dollar.

These published prices manufacturers usually assert. They adhere to the regular trade and request the jobber to make no deviation. In this we admit they occasionally have cause for complaint. But we must remember that there are very many large jobbing houses throughout the country with naturally various ideas of doing business. New jobbers have come into the market and have possibly made a more aggressive policy than was prudent to sustain prices. Possibly some permit one or more of their salesmen to deviate from the established price; and with the present adopted plan, where houses depend largely upon their traveling salesmen, with the number of traveling salesmen upon the road, many of whom were placed there without the necessary experience that each house would like to fortify their salesmen, or occasionally perhaps a salesman without that due sense of honor which each house would like each salesman to possess, that we find occasional deviation from instructions given by the house.

Occasionally from inexperience, or perhaps other reasons, he has made an error in price, or perhaps given a lower price intentionally, expecting it to go no further. Occasionally the house may have been at fault in giving the salesman a special price for a large buyer, or for a large quantity of goods, no less, however, than the manufacturer would have given the same house were he applied to for price. But this salesman may not have been discreet in using this price, or perhaps the buyer may not have appreciated the fact of it being a price for a large quantity to him as a large buyer, and he may have imparted this information to the next salesman that happens along, who impulsively takes for granted a change has taken place, and before hearing from his house, uses the price to his next customer.

Various causes and reasons exist, which occasionally cause a break in the established price, it frequently spreads like a prairie fire. But frequently reports reach both jobber and manufacturer where there is but little foundation in fact. After having passed through several mouths it is so magnified that the guilty person would scarcely recognize it as being the same case. Occasionally this will produce a storm of indignation by the manufacturer accusing the jobbers in the country of breaking faith, accusing all jobbers instead of interesting himself to ascertain who was the guilty person.

But how about the manufacturer? What excuse has he for taking up the gauntlet and entering the fight instead of at once trying to correct the evil, which in most cases could be done by judicious management and a little effort, and thus assist the poorly paid jobber, at best, for all his efforts, where his margin of profit in many cases is not equal to the expense account incurred in making sales.

And how about the manufacturer himself breaking his own price? I am bold enough to assert that in these times of aggressive competition the fault can quite as frequently be placed at the door of the manufacturer as it can at the door of the jobber. The manufacturer is frequently the jobber's most formidable competitor.

While the jobber or his salesman may have what appears to them a reasonable excuse for meeting a price named them on the road, what excuse has the manufacturer as to why he will fill the jobbing trade early in the season with his goods, and then compete against the jobbing trade with his own goods? I can see no possible reason or excuse other than this:

You all doubtless remember the story of the two friends on their way to Donnybrook Fair. "Pat," said one, "what am I to do when we get into a fight?" "Do?" said Pat, "why, whenever you see a head, hit it."

He cannot sell the same goods but once. The customer cannot buy his requirements from the manufacturer and the same requirements from the jobber. Why should the manufacturer be so grasping as to try and sell the jobbing trade early in the season, and at the time the jobber enters the field find the same manufacturer his own competitor?

There are many reasons why the manufacturer may not have the preference with this class of trade. He does not require a sufficient amount to make the shipment, and he can better give an assorted order to the jobber, unless the manufacturer has given him an advantage in price; usually the preference is in favor of the jobber.

Occasionally a house may be found that prefers buying direct from the manufacturer; but you will find he has frequently formed these conclusions by having been given to under-

stand at some time or other, by some manufacturer, that he would be sold goods at the same price as they sold their largest trade.

While it is unreasonable for a man to suppose he can buy \$10 worth of goods as cheaply as a man who could buy \$10,000, I think the manufacturer places the jobber in a bad light by quoting a customer a price below what the jobber was given as the manufacturer's best price for the quantity of goods. The customer naturally believes the jobber has misrepresented, and if that be so, why has he not sold him other goods at a higher price than he could have bought them direct from the manufacturers?

Nor is that all. The next salesman that comes along is informed of the price which has been given him by said manufacturer on such and such an article, and the salesman writes his house for permission to meet the price. Perhaps in the mean time he has given that price to his next customer. The goods are worth no more coming from the jobber than direct from the manufacturer.

Should the house write the salesman they cannot afford to sell at this price, the salesman becomes demoralized, and thinks his house either has not a competent buyer or the house desire to make a larger profit on the goods than is necessary. Hence the salesman informs his house that he could sell very many more goods if he was allowed to sell at the proper price. These are not isolated cases, and I regret to say of too frequent occurrence.

We have manufacturers of a large line of goods who are also, in connection with being manufacturers, jobbers of a larger line than they manufacture, who come into competition with other jobbers, and we usually find in those cases that they hold firm on the prices of the goods they manufacture. When we hear of a deviation it is usually on some outside goods.

It is usually the jobber's most desirable trade where the manufacturer finds a plausible excuse to cut below his own established price. We admit it is not to the trade that he may find quoted in the mercantile agencies as Y Z in one and M in the other, but when they find the rating is satisfactory and desirable, we regret to say, they occasionally lose their head and take for granted the quotation they send out may never reach the ears of those persons they have promised to protect.

Within the last few years there has been a great desire on the part of the manufacturer to extend his business to that extent that it is apt to bias his judgment. He hides himself in the belief that it may not become known, while the fact is that knowing it himself should be sufficient to deter him from making any such quotations.

A case in point (and I could give you 50 of them equally to the point). Upon an order from one of our salesmen, we sent an invoice for quite a line of goods. On receipt of the invoice the customer wrote to the manufacturer of a certain line embraced on the invoice for his price. He quoted him 5 per cent. less than we were given to understand was this manufacturer's price. We at once had a demand made upon us from the customer, to whom we had sold the goods, for an extra discount. The goods were worth no more to this man coming from us than they were coming direct from the manufacturer. In the mean time we were accused by the manufacturer of selling less than the price he quoted, because he did not receive the order; while we had filled the order before the manufacturer was asked for his quotation.

Another case: A salesman wrote us he had a certain customer he had been

trying to secure on a certain line of goods for over a year. At last there was some prospect of his selling him this line, and requested a line of samples sent him; these were sent, and the salesman spent an entire day and took his order for the entire line of goods. When again in want of these goods he wrote to the manufacturer, who quoted him a less price than he paid us, and after spending all this time in introducing this manufacturer's goods, we lost his trade. We rebelled to the manufacturer, and the answer was: "Why, he is quoted \$20,000 to \$40,000."

We regret to say in many instances manufacturers are quite willing to concede to the jobber customers that are quoted Y, Z or M, but frequently do not have the nerve to make the proper quotation which would give the jobber an equal chance of securing the order at the same price when a customer is quoted \$20,000 to \$40,000.

In a letter from one of the Hardware Jobbers' Associations in one of the large jobbing cities of the country I clipped the following: "The members of our association frequently have occasion to write different manufacturers, protesting against their quoting consumers or small retailers prices that are nearly the same as they allow the jobbers, and we believe there is scarcely a jobber in the country but that has felt the effects of such competition and realized the injustice of such a course on the part of the manufacturer."

The above extract, together with the experience of almost every jobber in our association, will give some idea of the growing disposition on the part of some of the manufacturers to extend their business on the Donnybrook Fair principle.

This matter has received some discussion between members of the association at our regular meetings, and there seems to be a question as to where the dividing line should be, as some retailers buy quite as many goods (if not more in certain lines) than jobbers in the same city; besides, some large houses are jobbers in large lines of goods and equally large retailers.

While we acknowledge there could be no general rule applied in cases of this kind, there can be a general rule applied as to the size of the house and the amount of goods sold by the house, and it is to this class of trade the jobbers protest against the manufacturers entering the field as their competitors, which in the end does the manufacturer no good, but his friend, the jobber, great injury, in gradually reducing his profit, which may end in a storm of indignation from the manufacturer, because the jobber has done what he himself has done and the policy he himself has inaugurated.

Our interests are identical. The manufacturer could not possibly get along without the jobber and be able to market his goods at the same low prices he is now able to do. Were he to adopt the system of sending salesmen out to visit the entire country, the expense of doing the same would necessitate an advance in price. The jobber does it, owing to the great variety of goods which are shown in the various price-lists issued by the jobbers throughout the country, varying in size from 1000 to 2000 pages, and he would be a small dealer, indeed, who cannot select a sufficient amount of goods from these price lists to make a respectable sized shipment, even though he has almost daily calls from some one or more jobbers.

RANDALL, HALL & Co., wholesale Cutlery, have removed from 104 Lake street to 16 North Clark street, Chicago, where they will enjoy greater facilities.

Letters from the Trade.

Overbuying.—A great many losses are attributed to overbuying by a correspondent, and the following supposed case is cited as an example of how this may occur:

A retailer with a small capital would confine his purchases to something near his needs and ability to pay for if his nearby jobber alone called on him. But instead of that possibly a dozen or more houses have representatives soliciting his trade, with the result that he buys from all and gets more goods than he can sell. Or thinking he can do a big business he sells to irresponsible parties and cannot pay his bills. A report on such a man will be after this fashion: "Married man; 30 years old; good habits; always considered honest; fair business ability; carries a nice stock and seems to be doing a good business." This is all easily found out, because your informant can see the nice stock and the good trade, but he can only take the man's word for what he owes on the stock, and lots of them don't know themselves. Mr. A says he must be good because Mr. B sells him, and Mr. C sells him because both Mr. A and Mr. B sell him, and so on. Now, if Mr. A would sell him and B and C would keep away, the man would buy what he needed and be able to meet his bills promptly and make money, but too many ruin him.

Quantity Price.—An evil resulting from buying enough goods by concerns of limited means to entitle them to the quantity price is touched upon by a progressive Hardware house as follows:

Some retailers who do a little jobbing make the effort to take a fixed quantity of certain goods in order to get the quantity price. Their legitimate trade does not justify this, and in order to unload they cut prices so that there is no margin of profit left. We know of a retail jobbing house in — who have offered Wire Cloth, in 25-roll lots, at \$1.36 per 100 square feet, delivered at the customer's door. If any one can figure any profit in buying more than they can readily sell and unload at such prices they are experts.

Legitimate Territory.—The prevalence of cut prices in leading lines of goods is a matter of much concern to the trade in general. A Western merchant refers to the following as one of the causes which contribute to this disastrous practice:

St. Louis and Chicago try to sell goods east of Cleveland; Cleveland retaliates by sending men in territory that belongs to Southern and Western cities, and in both cases they must equalize freight with each other. They cannot deny the fact that it is a losing game in many instances. There is a certain amount of goods used, and you cannot overstock the market very long. If jobbers would confine their efforts to territory that they can reach quickly and with a low rate of freight, they would sell as many goods and make more money. I have known of goods that are made in Columbus, Ohio, being shipped to St. Louis and then reshipped to Columbus at 5 per cent. less than the manufacturer's price. The same thing has been done by Cleveland and Pittsburgh jobbers, and this is no uncommon thing in other sections of the country.

The goods sold in this way are referred to by our correspondent as among those upon which the margin of profit

is small, and the conclusion is reached that they are necessarily sold at a loss.

Cutting Prices.—A correspondent identified with the wholesale trade, referring to the latitude taken by jobbers in cutting prices, writes as follows:

Jobbers of Hardware are the most generous mortals living; in one particular at least they seem to have an idea that they are public benefactors. They watch the market closely and try to get in on the safe side before an advance, and just as soon as the advance comes (which is very seldom these times) they hustle their salesmen out and allow them to give the advance away to their customers, or the salesman takes the liberty of selling at the old price, no matter what his instructions are, and will always have a good reason for doing so when called to account for it; while on the other hand, when an article declines in price, he is very prompt to advise his customers of the decline.

Our correspondent considers it legitimate to give a customer the benefit of any decline in price, and then continues:

And it is just as right to charge any advance, no matter how small, and it is absolutely necessary to get any isolated advance to even up. It is a well known fact that on most articles jobbers sell cheaper than manufacturers, though there are some few manufacturers who do not give the jobber any encouragement. Now, it is surely as much as any retail dealer can expect to buy goods from a nearby jobber at the same price as he would have to pay to the manufacturer when in most instances he can save quite an item in freight. The truth is we are too greedy. It breaks some people's hearts to see a competitor get a good order. In these times of sharp competition you cannot count on holding any man's entire trade. You can give him a confidential 5 per cent. and think you have him solid, but a competitor comes along and goes you one better and your solid customer forgets any obligation he may owe you.

Grange Stores.—The following extract from a circular letter sent out by a large Hardware house in a leading city will be appreciated by those of our readers whose trade is constantly suffering from the inroads made by the so-called grange stores or farmers' supply houses:

It has become fashionable for large firms to multiply their lines and actually try to deal in everything, and endeavor to increase their incomes by scalping a little from each one of their neighbors. An observing newspaper man has aptly named them "devil fish," because, like the octopus, they throw out their tentacles in every direction to crush the life out of their fellows. Possibly you may have been attacked by one and know how it is done. Now, while I do not believe in the methods of the devil fish, I believe it quite legitimate to fight him with his own weapons. Therefore, if there is anything outside of our line which you are in the habit of ordering from the class of houses referred to, you may find it profitable to send such orders to us. Possibly we may save you money. We are willing to make the effort if you will favor us with your orders.

The effort thus made to circumvent the houses which are not regularly in the Hardware trade appears to be well timed and may perhaps be adopted by other Hardware merchants. Thus the war can be "carried into Africa."

Success in Business.

BY FRED MACEY.

A CAREFUL REVIEW of the business career of any business man who has been pre-eminently successful in his affairs will discover that he has been guided by certain rules or maxims, the deductions of a keen observation of cause and effect, and the degree of success attained rests entirely on a man's ability to select good maxims and the vigor with which he uses them to serve the set purpose of his life. I want to put special emphasis on the two words "set purpose," for I am convinced that in them lies the key to success. This should be the first maxim in the life of every man, be he young or old. What other maxims there are all will be tributary to this great center. While it may take a little space to do it, yet I feel confident that if we can get before us the testimony of a few of our great business men on this subject it will be well occupied. Before making any quotation, however, I feel it my duty to say that while engaged in a special effort to interest a society of about 75 young men in selecting the right principles that insure success in life I requested several of the leading business houses of this country and England to briefly state what their experience had been. Several of them very kindly replied, and while not intended for notice here, yet I am confident that they would cheerfully give my readers the benefit of their remarks. From these replies I quote the following:

Gen. Russell A. Alger, ex-Governor of Michigan, referring to the great men of our country, said: "Their growth was slow but sure, based on absolute integrity, sobriety, industry and a set purpose."

Hon. John Wanamaker of Philadelphia and recently Postmaster-General of the United States replied: "I am sure that the only way for a young man to win is to make a plan for his life, embracing all that is honest, energetic and studious, and keep working at it day and night."

The Carnegie Steel Company, Limited, of Pittsburgh wrote: "The qualifications in young men that command success, briefly stated, are, in the most important part, painstaking and thoroughness in whatever is attempted."

From a letter of Armour & Co., Chicago, Ill., I quote: "I have found that it is the upright, conscientious and honest young man who fills the highest positions of trust."

With the above unquestionable indorsements, there can be no doubt that the first maxim for business success is to have a fixed purpose, aim high, determine to be the leading house of your kind in your State. Other rules and maxims will "fall in line," and if you do not live to see your ambition realized you may rest assured that the foundation and plan is so laid that others may take it up where you left off and carry it to a finish.

Having decided upon some definite aim, the most natural thing is to look about and profit by the experience of others in attaining it. Theirs, together with one's own good judgment, has taught that in any business' success depends on a few fundamental rules, among them being the following:

1. *Have a Set Purpose.*—Determine to achieve a certain object.

2. *Aim High.*—You may not hit the mark, but your chances are much better than if you did not try to hit it.

3. *Be Practical.*—Understand your business in all its details. Better to grow slow and sure than quick and uncertain. There is not a single successful business house in the country but the hand that rules it understands it.

4. *Secure Good Help.*—It must be paid for, but it is economy in the end. If a young man's interest is centered in seeing your business a success, suggesting where expenses can be lowered and business extended and improved, not afraid to work overtime or holidays, keep him, get all you can like him, and think twice before you let him go because you can get a substitute (?) for less money but whose interest lies more in "so much time for so much money" and not in results reached. The first man is worth half a dozen of the second. The quality of a business man's help gives character to his business. How many customers pass a man's store because of an uncivil or inattentive clerk. Better pay such help a salary yourself to work for your competitor than to have them about your business.

5. *Use Neat Stationery.*—It gives character to your business and helps both your credit and your sales.

6. *Buy Well.*—"Goods well bought are half sold" is no idle maxim. Spare no expense to have this done right. On this point more than any other rests success in business.

7. *Never turn a customer away* because you "haven't got it." If you haven't got it, get it. If you do not know where to get it, find out. It is in your line—you ought to know. Your customer comes to you because he expects you to know.

8. *Keep posted in everything* pertaining to your business. If a circular or catalogue comes to you and you don't care to buy "nail" it so you can find it when you want it. It may secure a good customer some future time.

9. *Be Social.*—Make your customers feel at home in your place of business. Be social. Don't let a customer feel that your interest in his welfare ends with his pocket book.

10. *Insist on Neat Packages.*—The difference in cost of a poor and a neat package is nothing, but in pleasing a customer is everything. Very often customers "transfer accounts" for no other reason than this. It is natural that they should.

11. *Fill Orders Promptly.*—Insist on this. If a customer can rely on having

goods when promised he will pay more for what he gets rather than patronize a house whose word cannot be relied upon. If you cannot keep your promise advise your customer. He then knows what to expect, but keep your promise even if you lose money by it. It will pay in the end.

12. Identify Yourself with the Public Affairs of Your Community.—You lose nothing by it. It does yourself good; it advertises your business, and very often opens avenues to extend your business that might otherwise be closed.

13. Advertise Your Business.—Use printer's ink carefully. Tell the people what you have to sell and what you can sell it for. But advertising does not end in printer's ink. The main thing is to educate the public to know that if they want anything in your line your house is the place to buy it; that there they can depend on getting exactly what they pay for; that if there is anything wrong you will make it right; that they will receive courteous treatment and prompt service; that if you haven't got what they want you know where and how to get it. These and similar services do more substantial advertising than any "newspaper talk" can hope to do.

14. Trade Papers.—Subscribe for and read the leading trades papers published in the interest of your business. Read them thoroughly. The knowledge gathered from their columns and advertisements places you in a position to buy and sell to better advantage. They are absolutely necessary to be intelligent.

15. Study Your Competitors.—Understand them thoroughly. Understand their strong as well as weak points. You can then more successfully compete for trade. In return keep them in ignorance of your methods and business policies.

16. Keep Silence About Your Private Affairs.—It seldom does any good to tell them and very often does much harm. If you are making money it is no person's business to know how you do it or how much you make, so long as you do it honestly. A man seldom regrets silence.

17. Sell at a Profit.—Understand what your goods cost you, how much you handle of each kind per year, what per cent. it costs to conduct business, percentage of bad accounts. Study each class of goods individually and fix a price that will pay a profit. You are in business for dollars and cents, and if you do not make them, then it is time for change of occupation.

18. Don't Let Old Stock Accumulate.—The longer you keep it the less valuable it becomes. Get rid of it. Sell it for what you can get for it. Send it back to your manufacturer or jobber in exchange for something more marketable. Get rid of it some way and at once. The longer you keep it the longer you must pay insurance, lose valuable room and interest on investment.

19. Watch Your Credits.—Don't hesitate to say "no" if you doubt you will receive your pay. An honest man will not hesitate to insure the payment of his accounts, a "crook" will get angry if his credit is questioned. Let him go. Your business is better without his patronage. When an account is due collect it promptly. Do not let accounts run. If a customer cannot pay when his account is due settle it either by an extension of time or partial payment. Have a definite understanding. Of course there are peculiar people, good customers; these a man must use tact to hold their trade and not offend.

20. Never Lose Your Temper.—Men seldom regret withholding an angry word or action. It pays to "keep cool."

21. Pay Your Bills Promptly.—It pays, you save your discounts, you strengthen your credit, you can buy closer. Firms can afford to sell on a closer margin to "good pay" than to "an uncertain" customer.

22. Watch the Little Things.—Big things take care of themselves; it is the little things that bother, that are the leaks, and very often, taken as a whole, the many "little things" outweigh the few big things. Be sure you receive what you order, both in quality and quantity. Do not carry too much stock—it eats up interest, insurance and space. Watch your discounts, freights, packages, &c.

23. Give Close Attendance to Correspondence.—Know for yourself the character of what both comes to and leaves the office. Many a customer has been lost by the assuming nature of a self important clerk and the lack of promptness in answering inquiries.

24. Make a Study of Your Trade.—Understand their wants. Study to give them better service; it binds them closer to you. Don't wait to be asked for it—give it voluntarily. If a customer feels that his wants are receiving constant thought he feels safe in letting his interest rest there.

25. Secure the Co-operation of Your Help.—Have no "favorites." Let their value lie in their merits only. Let them feel that the spirit of justice rules in their recognition. Study to command their respect. Turn a cold shoulder to familiarity. Manifest a personal interest in their individual welfare. Give them a field to work in and then know what they accomplish. Don't be backward to recognize merit. A word of praise or a promotion adds additional energy to their work. The best business houses in our country today rely for their strength upon the honesty, ability, studiousness and energy of their help.

26. Make Your Office Your Strength.—Have it perfect. Know how much you owe, know how much is coming to you, know your investment, know that your insurance is correct, know what your expenditures are and what for, what your receipts are and what for. If they are not what they should be there is a reason for it. Find it. Sys-

tem will do almost everything. The proper system will bring all the details of any business, however large, to a common center, and from this center can be traced the cause for any effect that appears, be it good or evil. When found, the evil can be removed and the good encouraged. Let the office be the last place to attempt to economize; have it perfect, cost what it will. Have good office help, have a good equipment—the best is the cheapest.

27. Insist on Results.—After all it is results that count. Dollars and cents is the entire aim in business. Weigh everything in this balance, adopt no system that has not this end in view. Keep no clerk that does not earn more than he receives, keep no article that does not aid in this final result. A man is in business for a living, for dollars and cents earned honestly. If he fails in this he is a failure as a business man, and in justice to himself should retire from the field.

A Questionable Business Policy.

AN ESTEEMED subscriber sends us the following communication, in which he refers to a practice that until now we were unaware had secured any footing in the Hardware trade:

One of the leading Hardware companies in the State of Illinois makes the statement in a letter which has just been received: "We find Chicago jobbers inclined to bait by low prices on a few items. We do not want any one to sell us at a loss, and only ask for fair prices." The letter has reference to one of the periodical circulars issued by a large Hardware house in Chicago as an advertisement on the plan of the combination dry goods and house furnishing stores in Chicago, which every Monday sacrifice a few articles to catch the crowd and sell other goods at a large profit. The number of articles thus quoted are comparatively few, but are sufficient to do considerable mischief. A small percentage of the circulars, of course, take effect, and, quality being equal or brands being the same, other merchants must meet the prices quoted. We doubt the policy of such circulars in a substantial line like ours, the effect on the general Hardware trade being demoralizing. They may now and again catch an order for a machine or for some inferior quality of material, but are certain to react against their authors. So far as goods so offered are known to be of first quality and of the brands which we sell, the quoted prices will be met, but not blindly met in any instance.

This method of making "leaders" may be desirable in the retail trade in order to attract the attention of the masses, but its practicability may be doubted when it comes to be applied to the dealings of jobbers with merchants.

IN A SPECIAL NOTICE in our advertising columns E. Bissell, Son & Co., 12 Murray street and 15 Park place, New York, give particulars in regard to sales which they will conduct on Tuesday and Wednesday, May 22 and 23. A large assortment of Table and Pocket Cutlery and kindred goods, together with about 300 Baby Carriages, will be offered.

Bicycle and General Repair Shops

In Connection With the Retail Hardware Store.

BY J. E. JANSSEN.

IN THIS MECHANICAL AGE the use of machines of various kinds is constantly on the increase. In the home we find the sewing machine, in the office the typewriter, and everywhere the bicycle. Each of these needs "looking after" at times by some competent person familiar with repair work. Many valuable contrivances are temporarily, if not permanently, discarded for the want of some slight repair or alteration, easily accomplished if the right man, properly equipped, was handy of access. In the larger cities each of these branches is likely to engage the attention of separate shops, but in the smaller cities there is not enough work of this kind to justify any one occupying himself with a single line. The gunsmith in these places is seldom adaptive. Often a foreigner who has learnt his trade in the old country is conservative to a degree; he usually confines himself to the one thing, doing, perhaps, a fair business during the season, but with plenty of time on his hands the rest of the year, because disdaining promiscuous job work as beneath his dignity. In these later days of machine made guns and interchangeable parts, the importance of the old time thorough smith has greatly waned, and except in larger cities, where retail gun stores still require expert specialists for high class work, he finds his occupation almost gone, unless able to conform to the many sided requirements that are in demand to-day. The Hardware dealer who is properly situated may find his opportunity in these conditions for the establishing of a

General Repair Shop.

The feasibility of such an undertaking will depend somewhat on the nature of his business and his surroundings. If his attention is mainly devoted to stoves, house furnishing and plumbing, and he is already running a tin shop, it may be questionable whether he can do it justice. But if he is engaged in general Hardware, with a department devoted to sporting goods, guns or bicycles, he is almost certain to make a success of it. His first care should be to secure the services of a

Competent Mechanic,

one who has a fair amount of experience and who is open to "tackle" any new thing that falls in the line of a "handy" man. To the gun business it will be found of decided advantage to have a repair shop on the premises, directly in the way of promoting sales and incidentally in the profit on repairs. Frequently new guns require some slight alteration,

and where guns are rented out during the season such can be kept always in proper trim, or some old stock taken in trade can be "reconstructed" during slack times to be sold in good order when occasion offers. Work of this kind will cost but little and pays well in the results, as compared with "sending it out," avoiding besides the loss of opportunities. But gun work may occupy only a small portion of the time, and that during the season, hence nothing must be neglected that will add to the list of "jobs."

Key Fitting.

Stencil making and safe work will supply a share of work the year around and will be found profitable. Bell hanging, setting up of electric circuits, putting special locks on doors, and repairing trunks, valises, &c., must all be taken in to furnish grist to the mill. Such work is often wanted quickly and

Odd Jobs

that will increase in proportion to the reputation of the workman and his capacity to apply himself. But it is well to draw the line at tinkers' jobs, mending of umbrellas or work involving greater charges than the article will bear or of a nature too trifling to justify the time spent. Some work may arise from the requirements of the store itself; some device will be wanted, perhaps for the show window, or some article of sale will require mending. Often special tools are required in the prosecution of work peculiar to the section; tools not supplied by the trade, or if so not of the exact pattern or of too cheap material. This affords opportunity for utilizing slack time to make up a quantity of such in proportion to the existing demand.

It has been my experience that from small beginnings a steady demand has

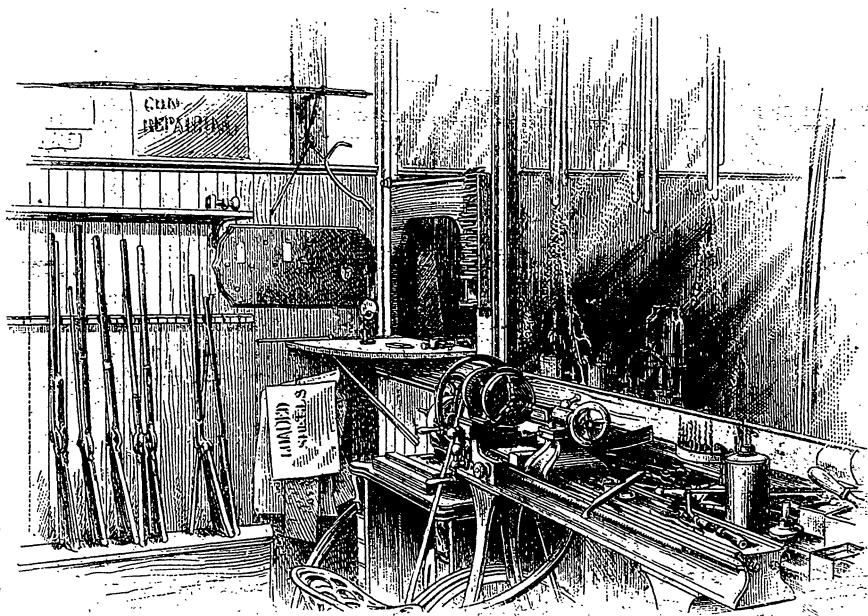


Fig. 1.—Partition and Front of Shop.

should be paid for liberally. When work is done outside the shop, such as fitting keys, &c., double the price should be charged to include extra time consumed. Sometimes a successful bid can be put in for work that is commonly sent to the larger cities, such as key tags for hotels, wardrobe checks for theaters or baggage checks, and even if the work is not done in the shop, that fact need not transpire. Likewise orders can be taken for steel name stamps, the prices at which these can be made by concerns prepared for that class of work leaving a very good margin of profit, and the time necessary to obtain them by mail being so short as to leave the impression that the work is done in the shop. People prefer to take such orders where they can be given verbally and because it relieves them of the responsibility of looking up and corresponding with strangers. In addition to the regular work coming under some definite head, there are numberless

ensued for articles of this kind made from patterns furnished by practical workmen. All such tools, stencils and other articles made in the shop should whenever possible bear the imprint of your name. This frequently leads to further orders from those not acquainted with this feature of your business. I have deferred reference to one branch of work which in many cases would undoubtedly prove the most important—that is

Bicycle Repairing.

The importance it assumes will depend to a great extent on the competency of your workman. If bicycles are carried in stock it can hardly fail to help sales, because enabling one to give certain assurances based upon an expert examination of the wheel and an accurate knowledge of its construction.

Further, it permits of making certain promises, if you wish, regarding guarantees or repair work that may become necessary within a given time

Although but trifling matters to you, such things mean much to the purchaser, enough perhaps to control his decision. It is the unknown that is dreaded, hence assurances in that direction have an added value. The ordinary repair work required on bicycles is of a simple kind, but some jobs demand the very best work to insure satisfaction. To braze broken parts of a frame or true up a buckled wheel both experience and care are necessary. Having now considered the possibilities open to those who may be contemplating the introduction of this feature to their business, let us examine the fittings and

Arrangement of a Shop

calculated to take in promiscuous work of the kind mentioned. First should be considered its location in the store with due regard to light. Unless previous arrangements or other

enough to admit easily a bicycle, trunk, or even a small safe, was put in; the door being supplied with a latch and having on the outside a notice, "No admittance," to keep out loungers. Facing the front of store an opening is arranged in the corner in the form of a receiving window, with a wide shelf, where small jobs can be handed in or finished work laid out. Alongside of this, hanging to the wall, is a keyboard to hang up all keys ordered and awaiting delivery. Each job when finished has a tag attached to indicate the amount due. Of these a number covering all denominations should be supplied and kept in a box with compartments. Inside of the shop the first important matter to provide is

A Solid Work Bench,

Fig. 2. This should be from 12 to 15 feet long, preferably against the wall.

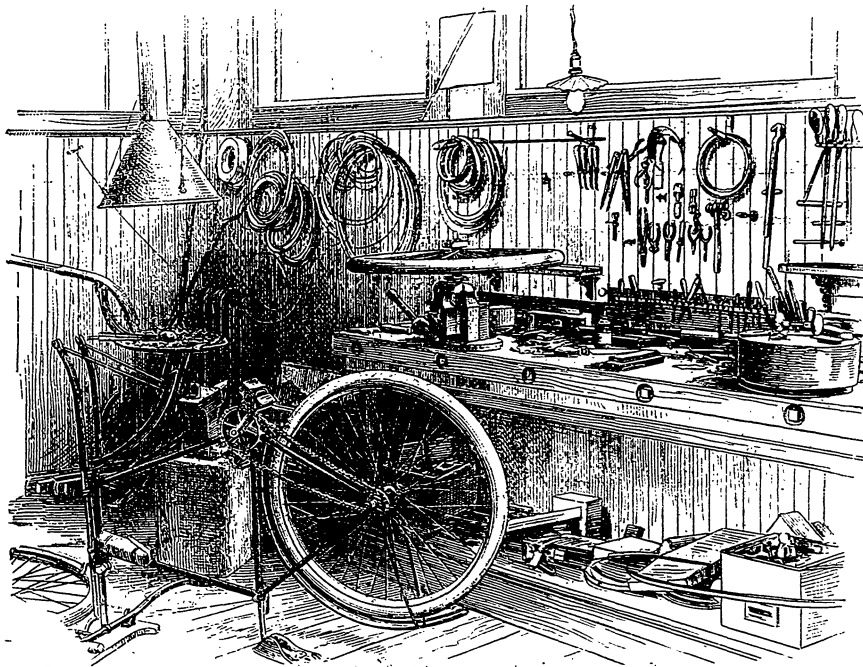


Fig. 2.—Work Bench, Forge, &c.

causes seriously interfere, the rear of your store, if admitting sufficient light, will be the best to choose. Where two floors are occupied or a basement, either of these may afford the desired conditions, but the latter is usually too cramped and dark and both have the disadvantage of being removed from sight. If the main floor is selected the arrangements shown in the accompanying cuts, upon which the following description is based, may be adopted with satisfactory results. A partition dividing off a space 20 feet long by 15 feet wide, Fig. 1, was erected to keep out dirt and noise; this is constructed of frames set in glass, resting on a base $3\frac{1}{2}$ feet high. For the lower front division large panes of plate glass were used as adding greatly to the impression and admitting of a constant view into the shop, even from the front of store, constituting a good advertisement. At a convenient point a door large

It should be well put together and have a top from 2 to 3 inches thick, and unless this be of hard wood a top sheathing of oak about $\frac{1}{2}$ inch in thickness should be supplied. Arranged in proper order all the bench tools should be suspended from holders fastened to the wall opposite. Files are most convenient of access when suspended from racks fastened to the edge of a narrow shelf. Near one end of the bench place the anvil and forge, and cover that entire portion of the floor with zinc or galvanized sheet iron. Many tools are required in the proper equipment of a shop, but it is not necessary to supply more than the essential ones at first, adding others as necessity requires. Much time can be saved by having just the proper tool for certain work.

For stencil cutting or punching it will be found useful to have a block of some hard wood, such as *lignum vitae*, sawed off square and even. For find-

ing punctures in pneumatic tires, a semi-circular trough made of zinc and resting on a square base will be found very useful. The trough contains water, and into this the inflated tire is immersed, disclosing at once the defective points. For straightening frame parts "out of true," we use a steel bar about 18 inches long, with a slot cut into the flat surface at the end, which should be neckshaped. For the

Locksmithing

branch a fairly complete assortment of the various key blanks in demand should be kept on hand. For this purpose a case of small drawers, each about $3 \times 4 \times 8$ inches, will be found most convenient, Fig. 3. Each drawer should be sampled to indicate the blank or class it contains, with the trade number recorded on a label pasted alongside. This greatly facilitates reordering, as much time is often spent in looking over key catalogues to find the exact one needed from the cuts, and then frequently mistakes are made. A portion of the drawers may be devoted to gun parts, bicycle extras, &c. Under this head it is well to keep in mind the opportunities for safe work, such as opening small safes, cleaning and looking after the mechanism of large safes and vaults. After a fair amount of experience in lock work the ambitious smith, with a natural bent for it, will usually take pride in studying out the problems of safe mechanism, and the penalty for people's carelessness and oversight will then prove a rich reward. Such work should be well paid for. If your workman is competent arrangements can usually be made with the agents of prominent safes to act for them in cases of emergency. This helps to give your man a standing not readily accorded in small communities, where people usually imagine that only an expert from the city can cope with such work. After a few successful instances of safe opening a reputation is quickly established. It will usually be

Found Profitable

to have a full assortment in small quantities of annealed iron, spring steel and brass wire, also sheet and rod brass and sheet steel. Besides being often required for repair work, such stock is frequently called for in small quantities, because not readily obtainable, and pays a good margin of profit.

All material partly or wholly used in the shop should be kept there and charged up to shop account; all sales should be credited to such account. This can be simplified by keeping a separate cash receipt and day book. The total daily receipts may be credited direct to shop account through the regular cash book, while the credit sales will reach it when being taken from the shop day book at close of month. By charging the same account with all wages paid to your workmen an accurate statement of results is always obtainable.

The Machinery Required

will depend on the scope and extent of the work undertaken, but usually a good sized foot lathe, or one adapted to power, and a small sized grinding and buffing head will cover all requirements. The latter will be found useful for grinding the various tools in use, and also to sharpen knives and scissors brought in by customers, and sometimes new tools that are wanted ground by the purchaser. Neatness and order should be insisted upon in the shop as much as in any part of the store, all litter should be removed once a day; materials used should have their place. Wire is best suspended from hooks with tag attached indicating price, gauge, &c.; rod brass and steel laid on projectings pins or harness hooks, and sheet material placed between uprights form-

mechanic. Having secured him, be careful to avoid the mistake of taxing his abilities beyond their capacity.

Trade Items.

THE SALEM WIRE NAIL COMPANY have changed their New York offices from room 28 to 32 in the building 277 Broadway, corner of Chambers street, being now on the Broadway side and in more commodious quarters. They refer to a substantial increase in the demand for Nails at a sharp advance in price, prompt shipments being urged.

JAMES M. MCNEILL has resigned the position of general manager of the National Wringer & Mfg. Company, Canton, Ohio. Mr. McNeill has not yet decided what line of business he will engage in. He advises us that he has received two offers from other Wringer manufacturers which he is considering.

KNAPP ELECTRIC & NOVELTY COMPANY, formerly at 34 Warren street,

panned antique copper and nickeled. This device works on an eccentric and is readily operated by the foot. A point is made of its efficiency and inexpensiveness.

J. F. WOLLENSAK, manufacturer of Transom Lifters, Bellhangers' and Locksmiths' Supplies, Electrical Apparatus, &c., has removed from his old quarters at 225 to 229 Lake street, Chicago, and now occupies the fine building which he has erected especially for manufacturing purposes at 38 to 44 South Canal street, on the corner of Washington street.

GEORGE E. BELL, formerly at 36 John street, New York, has moved to 54 of the same street. He deals in Boiler and Pipe Coverings, Asbestos Materials, Hair Felt, Emery Products, Polishing and Foundry Supplies, &c.

THE ATTENTION of those interested in Elevating and Conveying Machinery of any description is called to the advertisement of the Jeffrey Mfg. Company, Columbus, Ohio, in this issue. The firm are well known in the manufacture of this class of Machinery, also of Chain Belting and Specialties.

MORSE BURTIS, 52 John street, New York, manufacturer of Valves, Fittings, &c., has taken a suit of offices in the front of the building heretofore occupied by him, and on the same floor, giving much more commodious quarters.

BIGELOW & DOWSE COMPANY, 229 Franklin street, Boston, have been appointed sole agents for Keene Mfg. Company, Keene, N. H., Skate manufacturers. An illustrated price-list for the seasons 1894-95 shows long reach Skates, including Whelpley's Volant and Winner. These are shown in all clamp, strap and clamp and with wood bottoms.

CHARLES G. ECKSTEIN & Co., formerly at 41 John street, have recently removed to 45 Vesey street, between Church and Greenwich streets, New York. They have now opened a regular store, handling Wrought Iron Ornaments for railings, &c., Wrought Iron Moldings, special shapes in rolled and forged iron, Punches and Shears, a new feature in Chain Blocks and Petroleum Motors. This firm execute orders for all kinds of peculiar, exceptional and unique shapes in rolled iron, according to designs or specifications furnished them, and issue a catalogue showing a great number of unusual patterns.

H. B. WILLIAMS has just opened a retail Hardware store in the Nassau Chambers Building, 114 Nassau street, between Beekman and Ann streets, New York. He will carry a stock of Shelf Hardware, Cutlery, Locks, Dog Collars, &c. A specialty will be made of locksmithing and repair work. This is the only establishment of this character on the street or in the immediate neighborhood.

OUR READERS will observe the Special Notice on another page in which the Gunn Hardware Company, Grand Rapids, Mich., offer their retail Hardware business for sale. This business has been established since 1855. The reason given for selling is that W. S. Gunn, the manager and principal owner, has reached an age at which he is desirous of retiring. Quite a full illustrated description of the excellent arrangement of the company's establishment was given in our columns several years since.

WE ARE ADVISED that the Christy Knife Company have closed their Boston office, and hereafter the Eastern business will be attended to from their New York office, in charge of David Eastman, 64 Reade street.

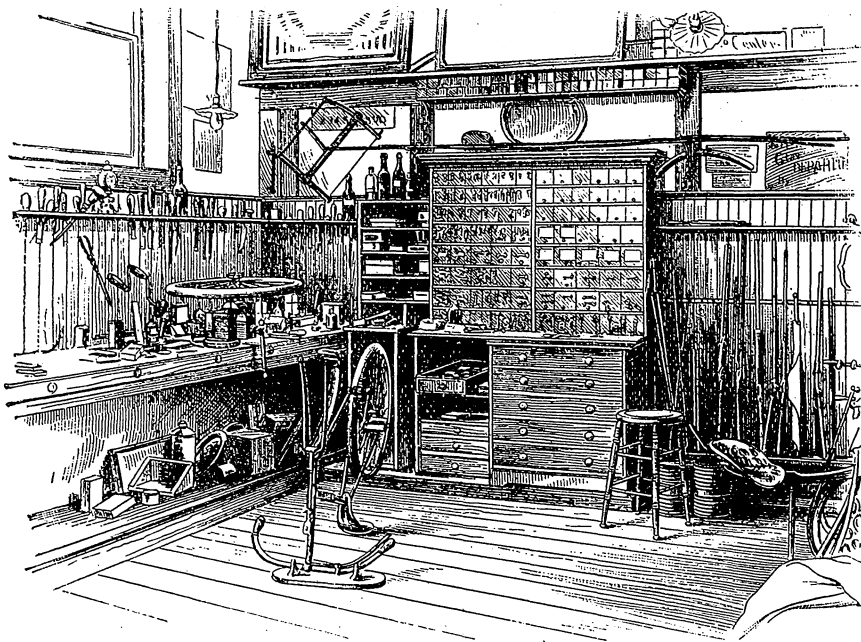


Fig. 3.—Drawers for Key Blanks and Parts.

ing divisions. Much practical knowledge may be acquired by the dealer or his assistants, where a shop forms an adjunct to the business, that will prove useful in the conduct of business. You will learn to demonstrate the special merits of a lock or of some tool, or you will be able to explain why an axe or a knife has failed to give satisfaction through being ground wrong or improperly sharpened. Perhaps you may increase sales in certain directions by undertaking for a small additional charge to put parts together, such as wringer rollers put on, license tags for dogs fastened to collar, butcher knives for cooks, &c., sharpened ready for use; the incidental advantages are numerous and will readily suggest themselves as the undertaking gets under way. Like everything else aiming for success, care and forethought in the management and planning are a requisite, while a certain amount of system should not be neglected. The first requisite will always remain the procuring of a competent

New York, are now located at 47, opposite, one flight up. The company make a specialty of Ventilating Fans propelled by battery motors. The outfit, neatly cased in wood box, with cover, natural finish, is offered at \$12, with a discount to the trade in quantities. We are advised it can be run over 100 hours without recharging the battery. Renewals cost \$2.10. It is intended largely for the office, home and invalid's chamber, and wherever desired to keep the atmosphere in motion. These goods, we are told, are being more and more sold by hardwaremen.

THE UNION SHOW CASE COMPANY, Chicago, Ill., illustrate the Dempsey Patent Cutlery Display Case, in connection with their advertisement this week. Among the desirable features are mentioned the arrangements for marking each article without soiling or marring the blades, for preventing rust, for keeping the stock in good condition, and for displaying the stock to advantage. The Cases are made of all lengths and in any desired finish.

E. J. HUSSEY & Co., 80 John street, New York, are introducing as Eastern agents the Harper Door Stop and Check. It is made of iron and can be supplied in three finishes, viz.: ja-

Arrangement of Stores.

R. F. OSBORN & CO.

THE wholesale and retail establishment of R. F. Osborn & Co., San Francisco, Cal., a plan of the first floor of which is given in Fig. 847, is referred to as being conveniently arranged for the combined business. The company occupy the whole building, which has four floors and a basement, 25 x 100 feet in size. The first floor is

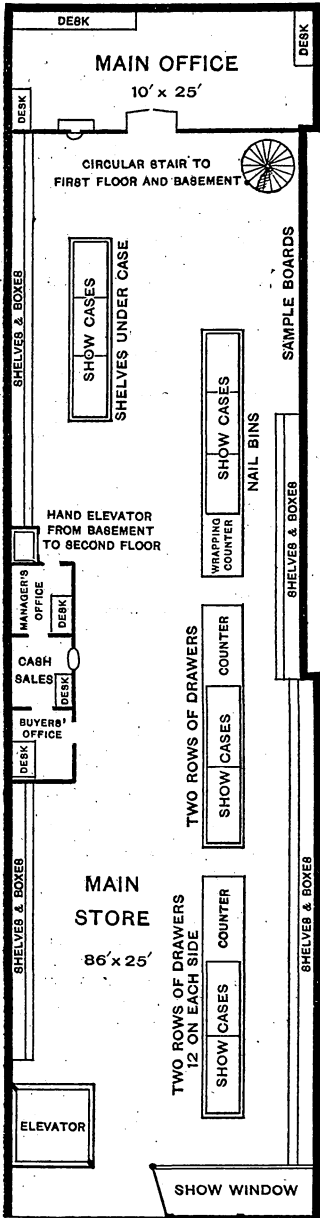


Fig. 847.—Plan of the First Floor.

used for the retail department and the second for surplus stock with which to supply the retail department. The wholesale department is also on the second floor, with a complete line of samples. The third story is used for stock rooms, where Refrigerators, Chair Seats, &c., are kept; the fourth floor being also used for stock room. The basement is used for packing and shipping goods and as a wareroom for full case goods. There are three elevators in use, one connecting with the sidewalk, one operated by a hydraulic ram and running from the first to the fourth floors, and a small hand eleva-

tor running from the basement to the second floor. The goods carried include Cabinet, Upholsterers', Piano, Carriage and general lines of Hardware, Gasoline

ders. The showcases are used for displaying Plated Goods, Cutlery and fine machinists', molders' and carpenters' Tools, of the latter of which they make a specialty. The main office is

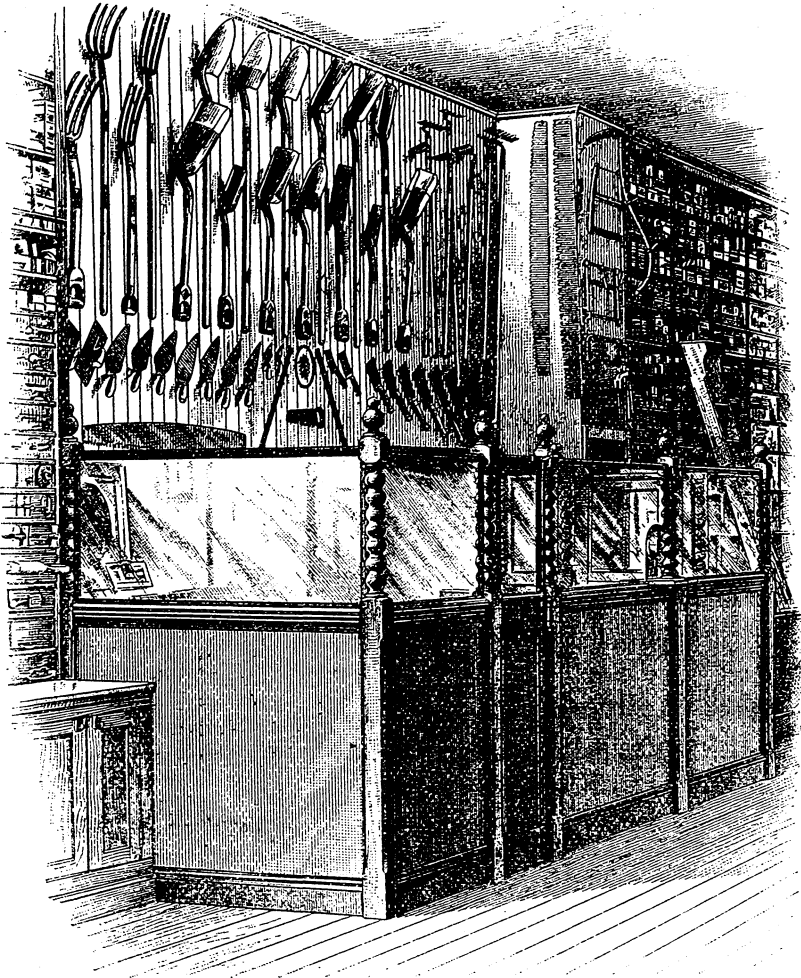


Fig. 848.—Charging and Cash Sales Office.

and Coal Oil Stoves and Heaters. Tools are carried for the use of carpenters, carpet layers, plumbers, ship calkers and carpenters, paper hangers, machinists, molders, &c. The shelv-

located at the rear of the store, while the charging and cash sales office is near the center, on the left hand side. This is shown in Fig. 848, and is 5 x 17½ feet in size, divided into three

CASH SALES						
R. F. OSBORN & CO.						
Dec 7 th 1893						
Nos. 1	2	3	4	5	6	7
20 00	15 00	20 00	40 00	10 00	15 00	40 00
Total,						\$ 160 00 100

Fig. 849.—Cash Sale Slip.

ing on both sides of the store runs to the ceiling, and is filled with sample boxes 5 feet above the ledges. The shelves above are used for duplicate stock, and reached by traveling lad-

apartments—the manager's office at one end, buyer's office at the other and cashier's office in the center. A tastefully arranged sample board occupies the wall back of the office.

In their cash system the firm employ four autographic cash tag registers, each holding a roll of 1000 tags. There are seven salesmen on the retail floor, each of whom is designated by a number. A lady clerk in the cash office is equipped with a rough cash book lined off into seven columns, numbered at the top to correspond with the numbers of the salesmen. Each cash tag is numbered by the salesmen, and as it is passed into the office is registered in the correspondingly numbered column of cash book, and the tag is placed on a file numbered to correspond with the salesman's number. The cash is balanced three times a day, at 8 a.m., 1 p.m., and 5 p.m. At the close of the day's business the tags are taken from the files, tied up and filed away for reference, with a cash sale slip, as shown in Fig. 849, on the outside. The slip shows the amount of sales of each salesman, and the total sales for the day.

R. F. Osborn & Co. were established in 1863 and have occupied their present building 30 years. At the present time they employ 13 persons in the store, there being also two traveling salesmen.

Electrical Goods in the Hardware Store.

BY W. P. STEWART.

IN CONSIDERING the advisability of handling Electrical Goods in connection with the Hardware business, the first question is, Does it pay? The experience of the writer is that it does pay in more ways than one.

In the first place, there is a good percentage of profit on the amount invested; in fact, as good as on any line of special or fancy goods usually handled.

In the next place, it evinces the spirit of enterprise and progress that should obtain in every modern Hardware establishment, and shows that it is up with the times.

NO ONE QUESTIONS

the value of this reputation in a business house. Energy, a complete stock and a comprehensive knowledge of the business are sometimes more profitable in the long run than cutting prices.

Provided the stock is not too large and varied, the labor attendant upon handling Electrical Goods is imperceptible, and is not worth considering in the discussion. As to space required, a case less than 3 feet square or a small wall space is ample to display as large a variety of Electrical Goods as it is desirable for a retail house to handle. Several of the manufacturers in this line have prepared at moderate cost just such

A DISPLAY BOARD

as is desirable. Electricity is something understood by few, but of interest to all, and such a display always attracts attention. Many persons who perhaps had no idea of purchasing anything of the sort, or, if they had

thought of it, were deterred by the impression that such things cost a great deal, upon learning that, say, \$3 or less would pay for a complete electric bell outfit they will invest.

The remark is often made that such things will do for people of means. In point of fact it is to persons of moderate means and with few servants that such conveniences are of the greatest value, while the amount of bother avoided by the use of a simple system of electric bells and speaking tubes has to be known to be appreciated. Of course electrical goods will not

SELL THEMSELVES

any more than other goods will, so it rests with the salesman to appropriately and in a pleasing and interesting manner call attention to the desirability of such appliances. It is not necessary that he be an electrician in even a very limited sense of the term, although some knowledge of the subject is of value, and can be very easily acquired in this electrical age.

It is of great importance in offering such goods not to claim too much. Do not let the desire to make a sale lead you to convey the impression that there is no danger of a bell getting out of order, or of a battery getting weak or giving out. Such things will happen, and it is well to call attention to the fact that the necessary material for maintenance can be easily and cheaply procured.

DIRECTIONS

frequently accompany the outfits furnished by manufacturers, and any person of average intelligence can put them in operation.

In regard to installation, if there is an available man in the house who can be intrusted with the work it would add to the profits, but except in large cities it would hardly pay to keep a man for such work alone. In every community, however small, there is generally some handy man who can do such jobs for a moderate consideration. There are two technical points which it will not be out of place to mention in this connection, a neglect of which has given more trouble than anything else in ordinary domestic work. These are neglect in

SPlicing AND TACKING

up wires. Insist upon long, clean bright and tightly twisted splices, covered with insulating tape, and never under any circumstances let one staple or tack be driven over two wires. Good outfits have often worked for months and then refused to respond to the strongest battery power simply because corrosion had ruined a loose or uncovered splice, or crossed a current where one tack held two wires. Sometimes plastering has to be torn out to get at such work or new wires run outside. Such carelessness does much to hurt the sale of electrical appliances.

In the opinion of the writer the Hardware dealer who can in a moderate way handle these goods to ad-

vantage will do well to confine himself to

DOMESTIC APPLIANCES.

which may almost be classed as House Furnishing Goods. The heavier articles in this line, such as are used by street railways and electric lighting stations, can be left to houses which handle such goods exclusively. Call Bells in sets, ready packed and complete, are the best sellers. These can be had with various styles of Bells and pushes or pulls. A neat and familiar device, and one which appeals strongly to every lady, is the floor push to be used under the dining table for communicating with the kitchen. A simple code of signals makes this a great convenience.

The ordinary annunciator, for indicating the source of the call, is a familiar appliance, and is so moderate in price that it can be advantageously handled. A careful examination of the catalogues of several large manufacturers in this line would convey very clear ideas of the many domestic uses to which this great servant of man can be applied.

One of the simplest methods of illustrating the operation of ordinary Bells is to have a push button at the front part of a store and a Bell at the rear or some distance away. This conveys a much better idea of its uses than when the button and bell are both attached to the same small box.

A small stock is all that is needed, as it is so easy in these days of rapid transportation to replenish.

A GOOD ASSORTMENT.

although perhaps not complete, would include the following:

One-half dozen assorted Bell Sets in boxes.

One-half dozen assorted Box Bells, 2½ to 4 inches.

One-half dozen extra Cells, Leclanche or other good battery of the same class.

One dozen assorted Wood Pushes.

One dining room Floor Push.

One Floor Push with 6 feet of extension cord and Push for table.

One Circuit Closer to use in connection with an old style door bell pull.

Two dozen extra Zincs.

Two dozen bags Sal Ammoniac.

Ten pounds No. 20 Annunciator Wire.

One two-point Annunciator.

One four-point Annunciator.

One pound package ½-inch Adhesive Tape.

One bronze Door Pull.

One 24-inch bell hanger's Gimlet.

Burglar alarms and gas lighting may be attempted, but as they require a greater amount of labor and technical knowledge, and are more liable to get out of order, had perhaps better be omitted by the average Hardware man.

W. H. SILLS, dealer in Mica and manufacturers' agent for Hardware Specialties, has removed to 59 Lake street, Chicago.

Price-Lists, Circulars, &c.

THE BRIDGEPORT CHAIN COMPANY, Bridgeport, Conn.: Triumph, Plumbers', Sash, Brown Chains, &c., Halter, Tie Out, Kennel Trace and Post Chains, Dog Leaders, Cow Ties, &c., are shown in their No. 3 illustrated price-list. The manufacturers state that tests have shown the Triumph Chain to be stronger than any produced, size for size; that it is made with twisted joint to the links, so that there is no welding, no projecting joints, and is yet flexible.

STOVER MFG. COMPANY, Freeport, Ill.: Ideal Wind Mills. An 1894 illustrated price-list is devoted to these Wind Mills in various forms of construction; also to Attachments, Stock Tanks, Round Tanks, Pumps, &c. Illustrations represent Mills adapted to watering stock, to conveying water from springs, rivers or lakes to distant points, to supply water for fire protection, sprinkling streets, lawns, &c.

BOSTON WOVEN HOSE & RUBBER COMPANY, Boston, Mass.: Cotton and Rubber Garden Hose, Rubber Belting and Packing. An illustrated price-list shows these goods, also Couplings, Hose Pipes, Spray Nozzles, Menders, &c.

THE WELMOT & HOBBS MFG. COMPANY, 20 Murray street, New York: Oilers, Lamps, &c. Catalogue B, 1894, illustrates with prices Swedish Steel Oilers, Oilers in sets, Jacket, Mill, Foundry and Mine Lamps; the Always Ready Economic Paint, Varnish and Shellac Can; Odorless Stew and Fry Pan, &c. The manufacturers state that they are having an increased and steady demand for their Copperized Oilers throughout the United States and Canada, and also for export.

It Is Reported—

Arkansas.

That the Hoffman Hardware Company of TEXARKANA have been incorporated, with a capital stock of \$25,000, of which \$18,700 has been subscribed. The incorporators are George Hoffman, Otto Hoffman and W. F. Drew.

Illinois.

That D. Nelson has sold his Hardware store at STILWELL to Mr. Tournay of WEST POINT.

That Daniel Henshie's Hardware store at PAWNEE was destroyed by fire on the 8th inst.

Iowa.

That Brown & Bahr of ELKADER will soon remove their Hardware stock to larger quarters to accommodate their increasing business.

That Brown Bros., ELBERON, have disposed of the Hardware part of their business to Mr. Nabor, who will continue it.

That Tatum & Walters, TIPTON, have sold their Hardware stock to N. M. Jordan of DES MOINES. Charles Cook of Tipton will manage the store.

That Maloney & Nelson's Hardware store at ESSEX was burglarized on the 30th ult.

That Paul Mowry has purchased the stock of Hardware formerly owned by G. F. Brayton, PERSIA. He will continue the business at the old stand.

That Simpson Bros. & Co. have purchased the Hardware stock of Baily & Ford, DUNCOMBE.

Kansas.

That \$75 worth of goods were stolen from the Hardware store of M. Van Buskirk, KINCAID, a short time since.

Massachusetts.

That the Hardware business carried on for the last 30 years at 488 Main street, SPRINGFIELD, has been sold by Frank E. Clark to a new concern styled the Clark Hardware Company.

That John Rhodes and James Cat-

low have formed a partnership at FALL RIVER in the Hardware and Cutlery business.

Michigan.

That the Hardware store of P. M. Church & Co., SAULT STE. MARIE, was damaged by fire on the 5th inst. to the extent of \$1500.

Minnesota.

That M. Petricka will soon engage in the Hardware business at OLIVIA.

That Henry Boyer has purchased J. Johnson's lumber yard and Hardware store at FOUNTAIN.

That Taylor Wilson has sold his interest in the Hardware business at WEST CONCORD to his partner, D. N. Webb, who will continue it at the old stand.

That H. O. Share has opened a new Hardware store at SARGENT.

That Zabel & Bretzke, PAYNESVILLE, have dissolved partnership.

Missouri.

That Byron Parr has recently opened a new Hardware store at GUILFORD.

That John Gilbert, formerly of Iowa, recently purchased the Hardware store of E. E. Yates at GALLATIN.

That the Humes Hardware Company of St. Louis have been incorporated, with a paid in capital of \$25,000. William Humes, Charles Humes and John P. Humes comprise the company.

Nebraska.

That five of the leading Hardware concerns of OMAHA have signed an agreement to close their stores at 7 o'clock on Tuesday and Friday evenings and all day Sunday.

New Hampshire.

That the store of Brown Bros., HANOVER, was entered by burglars on the night of the 7th inst. and \$300 worth of goods taken.

New York.

That Humphrey & Son is the style of a new Hardware firm at MANCHESTER. They have purchased the stock formerly carried by Pratt Bros.

That A. C. Buck & Co. of CARROLLTON have purchased the store of J. L. Mitchell & Co. at SPANGLER. They have closed up their store at CARROLLTON and have removed the stock to SPANGLER.

That R. H. Sackrider, CANTON, has disposed of his Hardware business to Howe Bros.

North Dakota.

That A. Baldwin will open a new Hardware store at BATHGATE.

That O. M. Bale has retired from the Hardware business at HOLTON.

Pennsylvania.

That Holwell Oliver has purchased J. A. McDougall's stove and tin store at PITTSBURGH and will continue the business.

That F. K. Wright has purchased the interest of H. S. Hastings in the Hardware business lately conducted by C. E. Brewster at WELLSBORO. Mr. Brewster will continue his connection with the business.

That C. Morgan's Sons' Hardware store at WILKES-BARRE was damaged by fire on the 9th inst. The insurance appraisers have awarded the firm \$3500.

South Dakota.

That the Hardware store of Johnson Bros. & Co., MADISON, was recently burglarized of \$100 worth of Cutlery and Revolvers.

That the old established Hardware business of Booth Bros., MITCHELL, has been disposed of to W. J. Healey, who takes possession of it on July 1.

That Ellefson & Benson of SISSETON have dissolved.

Tennessee.

That the copartnership heretofore existing between James H. Cruze, E. Buffat and E. G. Buckwell, under the firm name of Cruze, Buffat & Buckwell, KNOXVILLE, has been dissolved by mutual consent, Mr. Cruze retir-

ing. C. M. McClung & Co. and Messrs. Buffat and Buckwell have formed a copartnership under the firm name of McClung, Buffat & Buckwell as successors, and will continue the Hardware business in all its departments at the old stand, 34 Market Square.

Wisconsin.

That Leitgen's Hardware store at MANITOWOC sustained \$3000 damage from fire May 7.

That the William Frankfurth Hardware Company, MILWAUKEE, are intending to increase their capital to \$250,000.

That Caves & Smith, COLON STATION, have dissolved partnership, F. M. Smith succeeding.

The Hardware trade throughout the country are requested to report business changes, improvements and other matters of trade interest suitable for mention in this department.

Paints and Colors.

It should be understood that the prices quoted in this column are strictly those current in the wholesale market, and that higher prices are paid for retail lots. The quality of goods frequently necessitates a considerable range of prices.

White Lead.—Manufacturers and jobbers have had a rather better business, mainly in the shape of small orders for Lead and Oils for prompt delivery. In this, however, there is nothing above the early May average and the improvement reflects little more, if anything, than what should come in the natural course of events, considering the extremely modest character of business heretofore since the opening of the spring season. Dry Lead has been a rather slow seller, and now that crude material is weak in price there is little chance of any immediate improvement. The competition is too keen and the sellers of outside brands are still so vigorous that the combined corrodors have enough to do in looking after their own interests to prevent their establishing higher prices. Careful buyers who pay their bills promptly are yet shown special favors in the way of low prices, and upon the whole the market shows rather poor form. The line of quotations is not, however, materially changed.

Red Lead.—In routine way the movement of domestic brands has been very fair and chiefly at former prices, but general trade conditions, along with tariff uncertainties, serve to check operations in foreign brands. Such as it is, the business passing is chiefly at about the prices that have ruled for several weeks.

Litharge.—Low grades have been taken in fairly liberal quantities, but the volume of business is still rather below expectations. In the finer qualities the movement continues slow. Prices are still more or less variable, but show no radical change.

Orange Mineral.—Domestic product is selling at about former prices, but rather slowly, and purchases of foreign are running somewhat below the late average. Prices are still somewhat unsettled, with a leaning in buyers' favor.

Zincs.—The movement in American Oxide has been slow. Contract deliveries are now on a moderate scale, and new purchases, even of small quantities, are rather below the average. Competition is not particularly keen, yet sharp enough to keep prices rather soft. Foreign brands sell at about former prices, but in very moderate quantities only.

Colors.—In prices of Dry Colors no radical changes have taken place during the period under review, and the market is quite bare of distinctly new feature, trade being only fair and

hardly up to full average volume for the season. Oil Colors have fared somewhat better in point of sales, as have several lines of Mixed Paints, but prices continue more or less irregular and rather low.

Miscellaneous.—Black Chalk has undergone no change. Receipts and inquiries are alike small. Whiting sells quite briskly in a jobbing way at steady prices, but otherwise seems to be quiet. There is no new feature in the market for Barytes or the general line of Clays.

Oils and Turpentine.

Linseed Oil.—Cheap lots seem to be about all disposed of. At all events the out of town crushers who were recently vigorous sellers are now offering very sparingly and only at higher prices, while little if anything in the way of round lots is offered from second hands. This condition, along with quite good demand, gives the market very firm tone. There is some indica-

the genuine article. It is used for embossed work, car seats, book binding, &c. We are advised Messrs. Peck & Co. have a creditable display of this material at the Leather Trades Exhibition now taking place at the Agricultural Hall, Islington, England.

Common Sense Lawn Sprinkler.

The Stott Garden Implement Company, 136 Liberty street, New York, are introducing the Common Sense lawn sprinkler, illustrated in the accompanying cuts. Fig. 1 represents the sprinkler in use. Fig. 2 shows the sprinkler with a portion of the pipe broken away. The body is of $\frac{3}{4}$ -inch iron pipe, and the working parts of brass. When in position the top is 26 inches above the ground, the blade entering the earth about 7 inches. An umbrella spray is produced by means of

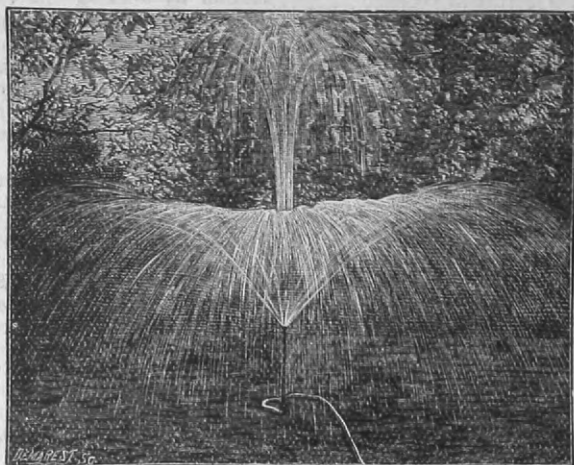


Fig. 1.—Common Sense Lawn Sprinkler in Operation.

tion that the trust has a firm grip upon the market.

Cotton Seed Oils.—There has been hardly any movement in prices and little more than routine business. Speculators manifest no interest and the export demand is slow. The offering is moderate as well, indicating indifference on the part of sellers despite the slowness of trade.

Lard Oil.—The quotation of 60¢ @ 61¢ is generally maintained for the prime grades of City made Oil and Western brands are about the same. The unsettled condition of the raw material is reflected in the lessened demand for its Oil product, buyers having restricted their purchases within the exact limits of their requirements. The off grade Oils, while very quiet in demand, are generally maintained on the basis of former quotations.

Fish Oils.—Only small business has been done in crude Menhaden, Sperm or Whale Oils, and the general situation is unchanged. The manufactured products are doing fairly in a jobbing way, and bring about the same prices that have ruled for a month or six weeks past.

Spirits Turpentine.—Prices ruled slightly lower at intervals during the week, but advices of higher rates and livelier business in the South caused a reaction. At this writing the market is firm at 30¢ for spot stock.

Wm. E. Peck & Co., exporters, New York and London, have undertaken to market abroad a commodity known as Pantasole, which is used extensively by the palace car companies and other interests as a substitute for leather. It is referred to as an excellent imitation of

the corrugated beveled edge of the plate, shown full size in Fig. 2, which has a radius of 20 to 40 feet, according to the water pressure. In operation there is also a fine spray of upright jets rising above the larger one, producing fountain effects. The plate in Fig. 3



Fig. 2.—Common Sense Lawn Sprinkler.

rests upon the beveled edge of the cup, as shown in Fig. 1, and is held in place by an ornamental nut. The point is made that there being no moving parts to get out of order, there is little lost

pressure. If choked by dirty water a loosening of the nut will allow the sedi-

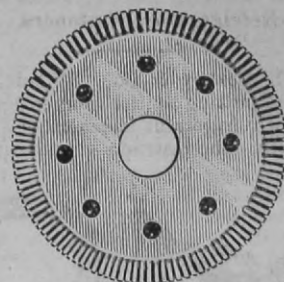
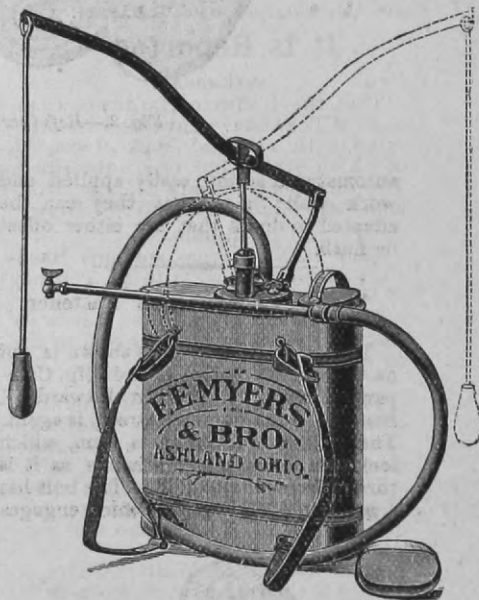


Fig. 3.—Bottom Surface of Corrugated Plate.

ment to be driven out by the force of water.

The Myers Knapsack Spray Pump.

F. E. Myers & Brother, Ashland, Ohio, are introducing a knapsack sprayer, as herewith illustrated. The tank is made to hold five gallons and is fitted with removable lid and strainer. The pump is constructed of brass, so as not to be affected by the poisonous arsenites used in the various formulas for spraying. The pump has a large air chamber, ball valves, solid plunger and agitator. The point is made that the pump is so arranged that the hard work is done on the down stroke of the piston, and so that no water can drip on the operator. The pump can be removed from the can easily and is fitted with handles, so that the operator can use it with either the right or left hand, as the cut indicates. It is explained by the manufacturers that by removing the lever the sprayer can be used in the same



The Myers Knapsack Spray Pump.

manner as their tank spray outfit, by setting the knapsack on the ground and working the pump by hand hold. The dotted lines indicate the manner in which the strap can be snapped to the opposite side of the can in a loop, serving in this position as a bail to carry it by when using it as a tank sprayer. The sprayer is referred to as a common sense device, answering the purpose of a knapsack sprayer equipped so it can be operated with the right or left hand, and also so arranged that it may be used as a tank or can spray, thus making it competent for washing windows, buggies, and for other uses of this kind at times when it is not required as a knapsack sprayer.

Refrigerator Fasteners.

P. I. Conroy & Co., Philadelphia, Pa., are putting on the market new designs of refrigerator fasteners, as shown herewith. The fasteners are constructed

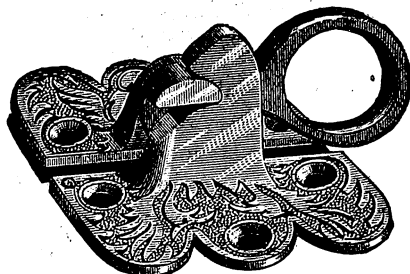


Fig. 1.—Refrigerator Fastener No. 5.

upon the same principle as those manufactured since 1885 by the company, and are made of bronze metal, nicely finished. The manufacturers call attention to the fact that the fasteners are

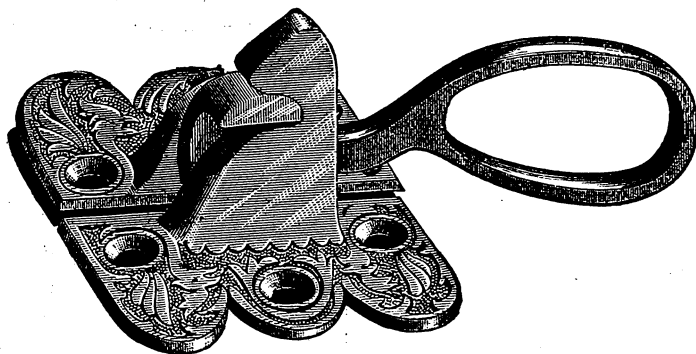
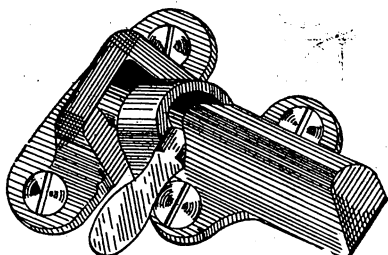


Fig. 2.—Refrigerator Fastener No. 4.

automatic in action, easily applied and work well; also that they can be adapted to doors that are either offset or flush.

The McFarland Sash Fastener.

The sash fastener here shown is put on the market by McFarland Mfg. Company, Boston, for whom Edward G. Shepard, 142 Chambers street, is agent. The bolt is worked by a cam, which locks or unlocks the window as it is turned from side to side. The bolt has a projection on the end which engages



The McFarland Sash Fastener.

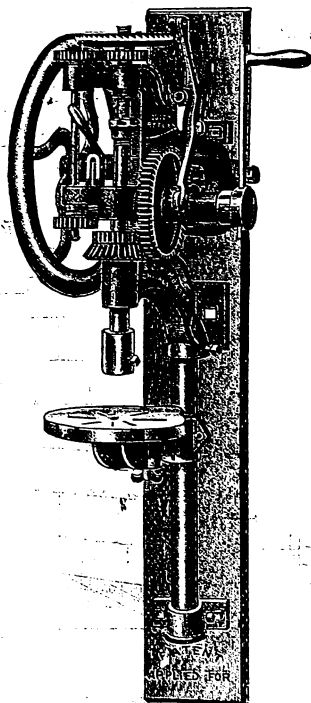
in the keeper on the upper sash, drawing the meeting rails into position and closely together. It is claimed that the fastener will draw heavy sashes together easily, and is especially adapted to use in public buildings.

John P. Lovell Arms Company, 147 Washington street, Boston, refer to their assortment of Lovell Diamond

Cycles as including a large variety of styles and as suited to the fancy of various riders. They remark that their facilities combine a thorough knowledge of the business with skilled mechanism in producing well made machines which meet with favor from the trade and bicyclists.

The S. D. Kimbark Quick Return Drill.

Blacksmiths, machinists and small manufacturers using hand tools for metal working will be interested in a new drill which has been brought out by S. D. Kimbark, Lake street and Michigan avenue, Chicago. An illustration of the machine is herewith given. One of its special features is the quick return, which is secured in a novel but very effective manner. The drill is operated by a crank, which is seen on the right of the machine. The crank is attached to a cog wheel, which by bevel gearing engages with a cog on the mandrel to give it a rotary motion. A pawl at the top, also operated



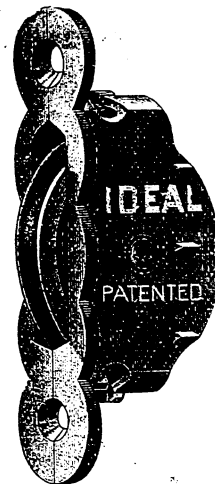
The S. D. Kimbark Quick Return Drill.

the mandrel. A lever throws the cogs on this attachment in or out of position. With the lever up, the machine

is merely a double geared hand or self feed drill. Pulling the lever down throws the quick return movement into play. The upper part of the mandrel has a screw thread cut in it. This is revolved by the attachment and the mandrel rises with the pitch of the thread. The operation of the machine is as follows: When the machine has fed down and the bit has bored the hole, with the right hand still grasping the crank, the left hand lifts the feed pawl and then throws down the lever of the attachment, when instantly the return motion acts and the bit is rapidly drawn out of the work and raised to any height; in its upward course the bit is revolving, thus clearing out the bored hole. The motion is so rapid on the return that the bit is safely withdrawn with no danger of breakage. The operator can secure either fast or slow motion by affixing the crank head to either one of the two shafts shown. Another good feature is the slotting of the table, which enables the work to be securely fastened in proper position. Tests have been made which show that over 20 per cent. of time is saved in boring with this machine, as compared with a drill which has no quick return.

Ideal Sash Pulley No. 60-65.

Stover Mfg. Company, Freeport, Ill., are putting on the market a new form of the Ideal sash pulley as herewith shown.



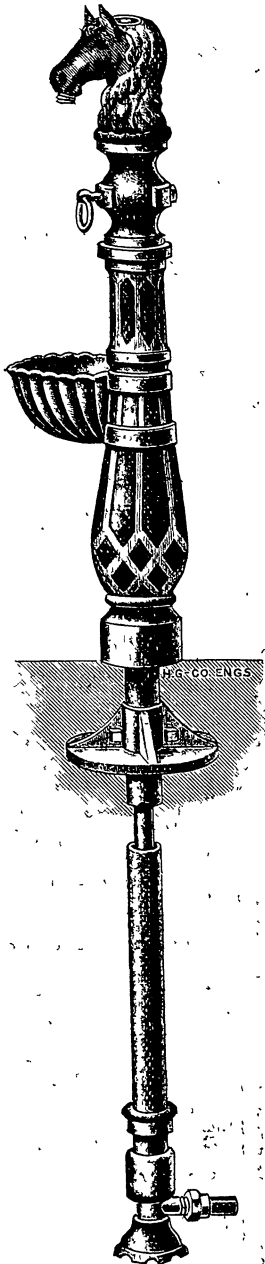
Ideal Sash Pulley No. 60-65.

The pulley is adapted to auger mortise, the face plate having scalloped sides and round edges to fit a mortise made with a 1-inch auger, which may be operated by hand or machinery, as desired. Markers are arranged on the side of the pulley for marking the centers by which to bore the holes, to simplify the process of applying and to insure a perfect fit in every case. The manufacturers claim for the pulley all the essential features embodied in other forms of Ideal pulleys, including cone axles, true wheels, noiseless running and the method of joining body and wheel in one. No. 60 represents unground and No. 65 polished pulleys. The manufacturers offer to furnish free sample and to quote prices on application.

PORTLAND LAWN SPRINKLER COMPANY, Portland, Maine, manufacturers of the Little Giant Traveling Lawn Sprinkler, are offering this machine for the third season, with several minor improvements, and report that the Hardware trade are increasing their demands for it.

Compression Stable Hydrant with Drinking Fountain.

Ette & Henger Mfg. Company, St. Louis, Mo., are offering the stable hydrant and fountain shown herewith. The hitching post is ornamental and extra heavy with a stock 4 feet high, cast in one piece, the water passing



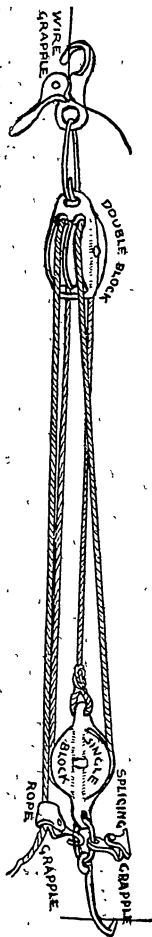
Compression Stable Hydrant with Drinking Fountain.

through the inner pipe. A wheel handle is furnished instead of a key for turning the water on or off when so desired. A heavy flange is placed on the pipe to prevent the post being moved out of the ground by either horse or frost and to relieve the valve from strain. The manufacturers claim the device is anti-freezing, that there is no packing in the top parts and that it can be repaired without digging up. The posts are made to set in the ground from 1½ to 10 feet.

THE BARNES MFG. COMPANY, Phoenix, N. Y., are now putting up the smaller sizes of Phoenix Vises in assorted lots on stands for the retail trade. These assortments are known as case assortments, of which there are three—No. 1, No. 2 and No. 3.

The Calkins Tackle Block Wire Stretcher.

The Gilbert & Bennett Mfg. Company, 44 Cliff street, New York, and 148



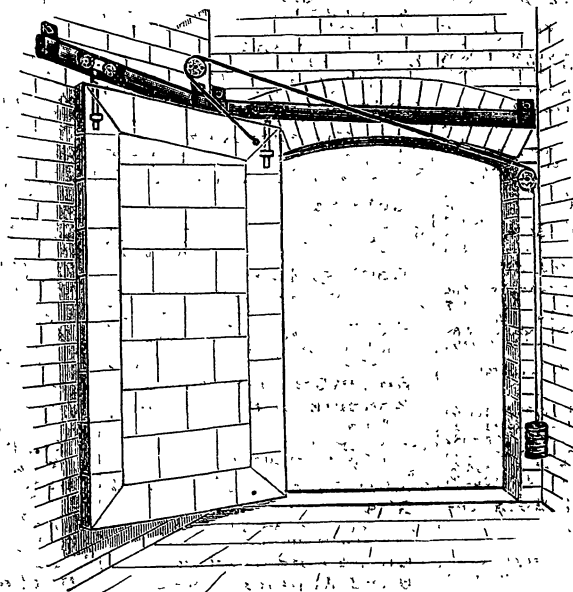
The Calkins Tackle Block Wire Stretcher.

Lake street, Chicago, are manufacturing the Calkins tackle block wire

which will form a valuable addition to farmers' equipments. Its primary function is for use in stretching wire fencing, either of separate strands or of netting. There are two blocks, connected by a rope, and two grapples, one at each end. One grapple is intended to be applied to a post, while the other grapple holds the wire. The latter grapple has a cam lever, by means of which the wire can be held, with a constantly tightening grip or instantly released. The operator tightens the wire and stretches the fencing by pulling on the rope, which is held at any point without tying by a cam grapple, as shown in the cut. It will stretch an entire width of web fencing or poultry netting by the use of a board into which nails are driven so as to catch in the meshes at twists. One of the grapples is then attached to the board. Another use to which the stretcher can be applied is, for hoisting. The tackle blocks are of such a character that they can be put in service to hoist quite heavy loads in convenient for handling by main strength. The wheels are 2 inches in diameter, and the metal parts are either wrought or malleable iron, neatly japanned.

The Coburn Self Closing Fire Door.

Coburn Trolley Track Mfg. Company, Holyoke, Mass., for whom Henry B. Newhall Company, 105 Chambers street, New York, are general agents, are introducing Coburn hangers for self closing fire doors, as shown herewith. The track is so arranged that when the door is open it stands against the wall at a right angle to passageway. In case of fire, it is explained, the door is released by the melting of the fusible link and closes itself, sliding smoothly around the corner, taking its position firmly against the opening. The company call attention to the fact that they have for a long time been placing fire doors on the Coburn trolley track, to slide in a direct line with the opening. As it is often the case that fire doors are needed at the end of narrow pas-



The Coburn Self Closing Fire Door.

stretcher, an illustration of which is herewith given. This device has recently been greatly improved, and is now offered to the trade as an article

sages or in some position where there is not space to slide; in the usual manner, the arrangement illustrated has been perfected to supply this want.

Current Hardware Prices.

MAY 16, 1894.

Note.—The quotations given below represent the Current Hardware Prices which prevail in the market at large. They are not given as manufacturers' prices, and manufacturers should not be held responsible for them. In cases where goods are quoted at lower figures than the manufacturers name, it is not stated that the manufacturers are selling at the prices quoted, but simply that the goods are being sold, perhaps by the manufacturers, perhaps by the jobbers, at the figures named.

The character @ is used to indicate a range of price thus discount 50&10@50&10&5 % signifies that the goods in question are sold at prices ranging from discount 50 and 10 % to discount 50 and 10 and 5 %.

Adjusters, Blind—

Domestic.....\$ doz \$3.00, 88¢@88¢&10¢
Excelior.....\$ doz \$10.00.....50¢10&25¢
North's.....\$ doz \$10.00.....list net @ 10¢
Zimmerman's—See Fasteners Blind.

Ammunition—See Caps, Cartridges, Shells, &c.

Anvils—

American—

Eagle Anvil, 12 in. x 14.....15¢15&25¢
Horse shoe brand, wrought.....11¢11¢&12¢
Moore & Barnes Mfg. Co.....39¢35¢

Imported—

Armstrong Mouse Hole.....9¢@10¢
S. & H. machine finished.....10¢@11¢
Trenton.....9¢@10¢
Wilkinson's.....10¢@10¢
Peter Wright's.....10¢@11¢

Anvil Vise and Drill—

Allen Anvil and Vise \$3.00.....40&10¢
Cheney Anvil and Vise.....25¢
Millers Falls Co.; \$18.00.....45&25¢
Star.....45&25¢

Apple Parers—See Parers Apple, &c.

Augers and Bits—

Boring Machine Augers.....70¢70&10¢
Car Bits, 12-in. twist.....50¢
Common Augers and Bits.....70¢70&10¢
Cincinnati Bell-Hangers' Bits.....30&10¢
Forster Pat. Auger Bits.....15¢
Jennings' Pattern Car Bits.....15¢
Jennings' Pattern Auger Bits.....60¢
O. E. Jennings & Co., No. 10, extension 10¢
O. E. Jennings & Co., No. 30.....40¢
O. E. Jennings & Co., Auger Bits, 1/2 set 32 1/2 quaters, No. 5, 30; No. 30, \$3.50, 25¢
Russell Jennings' Augers and Bits, 25¢40¢
Lewis' Patent Single Bit.....15¢10¢
L'Hommedieu Car Bits.....15¢10¢
Pugh's Black.....20¢
Pugh's Jennings Pattern.....30¢
Snell's Bits.....60&10¢60&10¢

Bit Stock Drills—

Cleveland.....50&10&25¢
Cincinnati.....50&10&25¢
Cincinnati, for metal.....45&10¢
Cincinnati, for wood.....50&10&25¢
Morse Twist Drills.....50&10&25¢
New Process Twist Drill Co.....50&10&25¢
Standard.....50&10&25¢
Syracuse, for metal.....50&10&25¢
Syracuse, for wood (wood list), 30¢50&25¢

Expansive Bits—

Clark's small, \$18; large, \$26.....35¢35&10¢
Ives' No. 4, \$ doz \$60.....40¢
Steer's No. 1, \$26; No. 2, \$18.....35¢40¢
Stearns' No. 2, \$48.....20¢
Swan's.....40¢

Gimlet Bits—

Bee.....25¢25&10¢
Common.....\$ doz \$2.50, 25¢30¢
Diamond.....\$ doz \$1.25, 40&10¢
Double Cut.....40&10¢50¢
Hartwell's.....\$ doz \$10.00, 40&10¢
Dougllass.....40&10¢50¢
Ives.....60&10¢60&10&25¢
Shepardson's.....45&10¢45&10&25¢

Hollow Augers—

Bonney's Adjustable, \$ doz \$48.....50¢
Cincinnati Adjustable.....35¢35&10¢
Cincinnati Standard.....25¢10¢
Dougllass.....39¢@39¢&10¢
French, Swift & Co. (Becher).....39¢@39¢&10¢
Ives.....39¢@39¢&10¢
Ives' Expansive, each \$4.50.....50&25¢
Stearns'.....20&10¢
Universal Expansive, each \$4.50.....20¢
Wood's, \$ doz, \$48.....25&10¢

Ship Augers and Bits—

L'Hommedieu's.....15&10¢15&10&25¢
Snell's.....25¢25&10¢
Snell's Ship Auger Pat'n Car Bits.....15&10¢15&10&25¢
Watrous'.....25¢25&10¢

Awl Hafts—See Hafts, Awl.

Awls—

Brad, Handled.....\$ gr \$2.50, \$3.00
Brad, Shouldered.....\$ gr \$1.30, \$1.40
Peg, Pat.....\$ gr 35¢, 38¢
Peg, Shouldered.....\$ gr \$1.50, \$1.55
Scratch, Handled.....\$ doz \$1.10, \$1.20
Scratch, Socket.....\$ doz \$1.10, \$1.20

Awl and Tool Sets—See Sets, Awl and Tool.

Axes—

First quality, best brands.....\$5.00@50.50
First quality, other brands.....5.50@6.00
Beveled add 50¢ doz.

Axle Grease—See Grease, Axle.

Axles—

No. 1 Common.....34¢34¢&10¢
No. 2 Common.....4¢@4¢
No. 7 1/2 in.....47¢35¢
No. 15 to 22.....70¢
No. 19 to 22.....70¢
Concord Axles, loose collar.....\$4@4¢
Concord Axles, solid collar.....5¢@5¢

Bag Holders—See Holders, Bag.

Balances—

Sash—

Caldwell, low list.....30¢
Pullman.....60¢

Spring—

Spring Balances.....40¢40&10¢
No. 2000.....20 80
Chatillon, \$ doz.....\$50 0.95 1.75 net
Chatillon Straight Balances.....40¢40&10¢
Chatillon Circular Balances.....50&10¢

Barb Wire—See Wire, Barb.

Bars—

Crow—

Cast Steel.....\$ doz 2 1/2, 2 1/2 @ 3 1/2
Iron, Steel Points.....\$ doz 2 1/2, 2 1/2 @ 3 1/2

Basins, Wash—

Standard Fiberglass, No. 1, 10 1/2 in., \$1.80;
12 in., \$2.00; 13 1/2 in., \$2.50; 15 in., \$3.00.

Beams, Scale—

Scale Beams, List Jan. 12, '82.....60&10¢
Chatillon's No. 1.....40¢
Chatillon's No. 2.....50&10¢50&10&5¢
Custer's.....39¢45¢

Beaters—

Egg—

Bryant's.....\$ gross \$14.00
Double (H. & R. Mfg. Co.), \$ gro., No. 0 \$12.00; No. 1, \$15.00; No. 2.....\$36.00
Dover.....\$ doz \$1.00, \$1.20
Dover (Standard Co.).....\$ doz \$1.00
Duplex (Standard Co.).....\$ doz \$1.00
Duplex Extra Heavy (Standard Co.).....\$ doz \$3.50
Easy (H. & R. Mfg. Co.).....\$ gro \$12.00
Improved Acme (H. & R. Mfg. Co.).....\$ gro \$9.00
Silver & Co.....\$ doz \$5.00
Triple (H. & R. Mfg. Co.).....\$ gro \$4.25 @ \$4.50
Triple (H. & R. Mfg. Co.).....\$ gro \$16.50

Culinary—

Keystone P. D. & Co., Each, No. 1, \$1; No. 2, \$2.....20¢

Bells—

Cow—

Common Wrought.....60&10¢
Kentucky Durham.....70&10¢
Kentucky, Sargent's list.....70&10¢
Kentucky "Star".....20&10¢
Texas Star.....50&10¢50&10&25¢
Western, Sargent's list.....70&10¢

Door—

Orank, Brooks.....50&10&25¢
Crane, Cone's.....10¢
Crane, Connel's.....20&10¢
Gong, Abbe's.....39¢45¢
Gong, Barton's.....40&10¢50¢
Gong, Yankee.....50&10¢50¢
Lever, R. & E. Mfg. Co.'s.....60&10¢
Lever, Sargent's.....60&10¢
Lever, Taylor's Bronzed or Plated.....net
Lever, Taylor's Japanned.....25&10¢
Pull, Brooks'.....50&10&25¢

Electric—

Bigelow & Dowse.....20¢20&10¢
Wollensak's.....20¢20&10¢

Hand—

Extra Heavy Brass.....70¢
Light Brass.....70&10¢70&10&25¢
Silver Chime.....39¢45¢
White.....70¢
Globe Cone's Patent.....25&10¢35¢

Miscellaneous—

Call.....45¢50¢
Farm Bells.....25¢
Steel Alloy Church and School Bells.....50¢

Bellows—

Blacksmiths'.....60&10¢10¢70¢
Hand Bellows.....40&10¢50¢
Molders'.....40&10¢50¢

Belting, Rubber—

Common Standard.....75&10¢75&10&5¢
Extra.....60&10¢70¢
Standard.....70&10¢75¢
N.Y.B.&P. Co., Carbon.....60&10&5¢
N.Y.B.&P. Co., Double Diamond.....60¢
N.Y.B.&P. Co., 1346 Para.....40&10¢

Bench Stops—See Stops, Bench.

Benders and Upsetters, Tire—

Detroit Perfected Tire Bender 15@15&10¢
Green River Tire Benders and Upsetters.....20¢
Stoddard's Lightning Tire Upsetters.....15¢

Bits—

Auger, Gimlet, Bit Stock Drills, &c., see Augers and Bits.

Bit Holders—See Holders.

Blind Adjusters—See Adjusters, Blind.

Blind Fasteners—See Fasteners, Blind.

Blind Staples—See Staples, Blind.

Blocks—

Cleveland Block Co., Mal. Iron.....50&10¢60&10¢
Moore's Novelty, Mal. Iron.....50¢50&5¢
Sims Ship Steel Block Co., 20¢25&10¢
See also Machines, Hoisting.

Bolts—

Carriage, Machine, &c.—

Com. List June 10, '84.....80&10¢80&10&5¢
Genuine Eagle, Norway, list Oct. '84.....80&5¢80&10¢
Eagle, Norway, list Oct. '84.....80&5¢80&10¢
Phila. pattern, list Oct. 7, '84.....80¢
R.B. & W., old list.....70¢
R.B. & W., list Jan. 1, 1890.....80&10¢80&10&5¢
Machine, list Jan. 1, 1890.....80&10¢80&10&5¢

Door and Shutter—

Cast Iron Barrel Square, &c.....75&10¢75&10&5¢
Cast Iron Chain (Sargent's list).....65&10¢65&10&5¢
Cast Iron Shutter Bolts.....75&10¢75&10&5¢
Cast Iron Shutter Bolts.....60&10¢60&10&5¢
Wrought Barrel.....75&10¢80¢
W.R. B. K. Flush Common.....60&10¢60&10&10¢
W.R. Shutter, Brass Knob.....60&10¢60¢
W.R. Shutter, Sargent's list.....60&10¢
W.R. Shutter, all iron, Stanley's.....65¢@70¢
Wrought Bolt, Sargent's list.....75&10¢80¢
W.R. Sunk Flush, Sargent's list.....60&10¢
W.R. Sunk Flush, Stanley's list.....60&10¢

Stove and Plow—

Plow.....60&10¢60&10&10¢
Stove.....65¢70¢
R. B. & W., Plow.....55¢

Tire—

Common, list Feb. 28, '83.....70¢70&10¢
American Screw Company.....75¢
Norway, Phila., list Oct. 16, '84.....75¢
Eagle, Phila., list Oct. 16, '84.....75¢
Bay State, list Feb. 28, '83.....70¢
Port Chester Bolt and Nut Company.....70¢
Empire list Feb. 28, '83.....70¢
Keystone, Philadel., list Oct. '84.....75¢
Norway, Phila., list Oct. '84.....75¢
R. B. & W., Philadel., list Oct. 16, '84.....80¢

Borers, Tap—

Common and Ring.....20&10¢
Clark's.....39¢@35¢
Enterprise Mfg. Co.....25¢
Ives' Tap Borers.....39¢45¢

Boring Machines—See Machines, Boring.

Bow Pins—See Pins, Bow.

Boxes, Letter—

Tatum's.....40

Boxes, Wagon—

Per doz.....24¢

Boxes, Miter.

Spilker's Excelior, 8 in. \$7.50, 4 in. \$3.50, 5 in. \$13.00, 6 in. \$15.00.....20¢

Braces—

American Bit Brace and Tool Co.....60&10¢
Nos. 10, 12, 20.....60&10¢
Nos. 11, 21, 24, 27.....70&10¢
Nos. 22, 23, 25.....60&10&25¢
Nos. 15, 26, 30, 37.....70&10&25¢
Amidon's.....75&10¢80¢
Barker's Imp'd Plain.....65&10¢70¢
Barker's Imp. Nickeled.....75&10¢80¢
Barker's.....60¢
Globe Jawed.....40&10¢40¢
Cruiser Brace.....40&10¢40¢
Universal, 8 in., \$2.10; 10 in., \$2.50.....\$1.10@1.15
Buffalo Ball.....50&10¢
Barber's.....50&10¢
Bartholomew's.....50&10¢80¢
Nos. 25, 27 and 30.....50&10¢80¢
Nos. 11, 11 1/2, 11 1/4.....70¢70&5¢
Common Ball, American.....\$1.00@1.10
Davis Patent.....60¢
Fray's Genuine Spotted.....50&10&25¢
Fray's Nos. 70 to 120, 81 to 123, 207 to 414.....50&10&25¢
Ives' New Haven Novelty.....70¢70&5¢
New Haven Ratchet.....60&5¢60&10¢
Barber Ratchet.....60&5¢60&10¢
Barber.....60¢
Spotted.....60&5¢60&10¢
P. S. & W. Co., Peck's Patent.....60¢
Rose & Johnson.....60¢
Saxton's.....75&10¢80¢
Barker's Imp. Polished.....65&10¢70¢
Barker's Imp. Nickeled.....60&10¢60¢
Ratchet, Polished.....40&10¢60¢
Ratchet, Nickeled.....40&10¢60¢
Buffalo Ball.....net, \$1.10@1.15

Brackets—

Shelf, fancy.....70¢70&10¢
Sargent's list.....70¢70&10¢
Other makes at a wide range of prices.

Bright Wire Goods—See Wire.

Broilers—

Hemis Self-Inch.....9 10 9x11
Basting, \$ doz.....\$4.50 5.50 6.50
Morgan Odorless.....\$ doz \$15, 50¢
New Haven.....50¢
Quebec City.....39¢45¢
Wire Goods Co.....60&10¢

Buckets, Well and Fire—

See Pails, Galvanized.

Bull Rings—See Rings, Bull.

Butcher's Cleavers—See Cleavers, Butcher's.

Butts—

Cast Brass, Fast.....39¢45¢
Cast Brass, Loose Joint.....39¢45¢
Cast Brass, Tiebout's.....60¢
Wrought Brass.....80&10¢80&20¢

Cast Iron—

Fast Joint, Broad.....60¢60&5¢
Fast Joint, Narrow.....60¢60&5¢

Loose Joint, Japanned.....75&10

Loose Joint, Jap. with Acorns.....@80¢

Loose Pin, Acorns.....

Loose Pin, Acorns, Japanned.....

Loose Pin, Acorns, Japanned, Plated Tips.....

Mayer's Hinges.....

Parliament Butts.....

Wrought Steel.....

Fast Joint, Broad.....

Fast Joint, Narrow.....

Inside Blind, Light.....

Inside Blind, Regular.....

Loose Pin.....

Table Butts, Back Flats.....

Bronzed Wrought Butts.....

Cages, Bird—

Hendryx Brass.....

3000, 5000, 1100 series.....10¢

1200 series.....40¢

200, 300, 600 and 900 series.....40&10¢50¢

Hendryx Bronze.....

700, 800 series.....40&10¢50¢

Hendryx Enameled.....40&10¢50¢

Callipers—See Compasses.

Calks Toe—

Burke's, One Prong, Blunt.....4¢@5¢

Burke's, One Prong, Sharp.....5¢@6¢

Burke's, Two Prong, Blunt.....5¢@6¢

Burke's, Two Prong, Sharp.....5¢@6¢

Gautier, One Prong, Blunt.....5¢@6¢

Can Openers—See Openers, Can.

Cans Milk—

S. S. & Co., 5-gal., \$3.00; 3-gal., \$2.40;
10-gal., \$4.75 each.....40&10

Cans Oil—

Galvanized Blue Band, 1 gal., \$ doz \$2.35

Galvanized Blue Band, 5 gal., Tip-Top, \$ doz, \$12.00

Galvanized Blue Band, 5 gal., Faucet, \$ doz, \$3.00

Glass Oil, Friend.....\$ doz, \$2.75

Caps

Hicks & Goldman's and Union Metallic Cartridge Co.....\$ 1000

Eley's E. B.....50¢50¢

Eley's D Waterproof, Central Fire.....\$1.00

E. B. Grund, Edge, Cent. Fire, 1-10's.....47¢50¢

E. B. Trimm'd Edge, 1-10's.....47¢50¢

F. L. Waterproof, 1-10's.....50¢50¢

G. D.....27¢30¢

Musket, Waterproof, 1-10's.....50¢50¢

S. B. Genuine Imported.....45¢

Primers—

Berdan Primers, \$1.00.....25¢

B. L. Caps (Sturtevant Shells) \$1.00.....25¢

All other Primers, \$1.50.....25¢

Cards

Watson's Cotton, Wool, Horse and File, list January 23, 1891.....25¢

Carpet Stretchers—

See Stretchers, Carpet.

Cartridges—

B. B. Caps, Con. Ball, Swrd., \$1.85@1.90

B. B. Caps, Round Ball.....\$1.60@1.65

Blank Cartridges, except 22 and 32 cal., additional 10¢ to above discounts.

Blank Cartridges, 22 cal., \$1.75.....25¢

Blank Cartridges, 32 cal., \$3.50.....25¢

Cent. Fire, Military and Sporting 15&25¢

Cent. Fire, Pistol and Rifle.....25&25¢

Primed Shells and Bullets.....15&25¢

Chalk Lines—See Lines.**Checks, Door—**

Unit	50%
Chisels—	
Socket Framing and Firmer	
Mix.	
P. S. & W.	75% to 80%
Witherby	
Buck Bros.	30%
Charles Buck.	30%
Douglas	75% to 10%
Merrill	60% to 80% to 85%
L. & J. White.	30% to 35%

Tanged and Miscellaneous.

Buck Bros.	30%
Charles Buck.	30%
Butcher	\$4.75 to \$5.00 to 2
Spears & Jacksons	5% to 2
Tanged Firmer	50% to 60% to 10%
L. & J. White, Tanged	25%
Cold Chisels, fair quality, P. S.	14% to 16%

Chucks—

Beach Pat.	each, \$8.00.	20%
Danbury	each, \$6.00, \$9.00	25%
Graham Patent	each, \$8.00	25%
Morse's Adjustable	each, \$7.00, \$9.00	25%
Syracuse, Bals Pat.		25%
Skinner Patent Chucks		40%
Combination Lathe Chucks		40%
Drill Chucks		25%
Independent Lathe Chucks		40%
Planer Chucks		20%
Universal Lathe Chucks		40%
Union Mfg. Co.		40%
Combination		40%
Independent		40%
Universal		40%
Victor	\$8.50, 25%	

Churns—

McDermid Star Barrel Churn	each	6 gal., \$2.60; 10 gal., \$2.75; 15 gal., \$3.00; 20 gal., \$3.25.
Tiffin Union	each, 5 gal., \$3.25; 7 gal., \$3.75; 10 gal., \$4.25.	

Clamps—

Adjustable, Cincinnati	15% to 10%
Adjustable, Hammers	15% to 15%
Adjustable, Steam's	30% to 30%
Barnes' Machinists' Clamps	30%
Cabinet, Sargent's	30%
Carpenter's, Cincinnati	25% to 10%
Carriage Makers', P. S. & W. Co.	40% to 10%
Carriage Makers', Sargent's	75% to 75%
Eberhard Mfg. Co.	40% to 40%
Joiners' Clamps, Tatum's	25% to 10%
R. I. Tool Co.'s Wrought Iron	25%
Saw Clamps, See Vices, Saw Files	
Steam's Malleable, with Wrought Iron	75% to 75%
Screw	40% to 40%
Warner's	40% to 40%

Cleavers, Butchers—

Beatty's	40% to 40%
Bradley's	25% to 30%
Forster Bros.	25% to 30%
New Haven Edge Tool Co.'s	30%
Nichols Bros.	30%
P. S. & W.	35% to 35%
Schulte, Lohoff & Co.	40% to 40%
L. & J. White.	25%

Clips—

Baker Axle Clips	25%
Norway, Axle	55% to 55%
Norway Spring Bar Clips	55% to 55%
2d grade Norway Axle	55% to 55%
Steel Felloe Clips	55% to 55%
Superior Axle Clips	55% to 55%
Wrought Iron Felloe Clips	55% to 55%

Cloth and Netting, Wire—

See Wire, etc.

Cocks—

Hardware list (Globe, Kerosene, Lever, Bibbs, Racing, etc.) 60% to 60%

Coffee Mills—

See Mills, Coffee.

Collars Dog—

Brass, Pope & Stevens' list.	40%
Chapman Mfg. Company, new list.	40%
Embossed, Gilt, Pope & Stevens' list.	40%
Leather, Pope & Stevens' list.	40%
Medford Fancy Goods Co.	40% to 40%

Combs Curry—

American Curry Comb Co.	35% to 40%
Fitch's	50% to 50%
Gibb's Magnetic	40% to 40%
Kohler's Humane	40% to 40%
Kohler's Magic Oscillating	40% to 40%
Rubber, per doz.	10.00.

Compasses, Dividers &c—

Compasses, Callipers, Dividers	70% to 70%
Bemis & Call Co's	
Dividers	
Callipers, Call's Patent Inside	65%
Callipers, Double	65%
Callipers, Inside or Outside	65%
Callipers, Wing	60%
Compasses	50% to 50%
Excelsior	
Starrett's	
Combination Dividers	25%
Lock Callipers and Dividers	25%
Spring Callipers and Dividers	25% to 10%
Stevens & Co's	25% to 10%

Coolers, Water—

S. S. & Co.: 2-gal., \$3.40; 3-gal., \$4.00; 4-gal., \$4.50; 5-gal., \$5.00 each.

Coopers' Tools—

See Tools, Coopers.

Cord—

Braided, Crown, Drab and Fancy, P. S.	50%
Braided, Crown White, P. S.	50%
Cable Laid Italian Sash, P. S.	15% to 20%
Common	8% to 8%
Common Russia Sash, P. S.	12% to 12%
Egyptian, India Hemp, Braided, P. S.	12%
India Cable Laid, P. S.	11% to 11%
Massachusetts, White, P. S.	25% to 25%
Ossawaun Mills—	
Braided, Giant, Drab and Fancy, P. S.	10%
Braided, Giant, White, P. S.	30%
Patent, good quality, P. S.	10% to 11%
Patent Russia Sash, P. S.	15% to 15%
Samson—	
Braided, Drab Cotton	40%
Braided, Italian Hemp	40%
Braided, Linen	50%
Braided, White Cotton	37%
Semper Idem, Braided, White	38%
Silver Lake	
A quality, Drab, 55%	25%
A quality, White, 50%	25%
B quality, Drab, 85%	10%
B quality, White, 80%	10%
Sylvan Spring, Extra Braided, Drab	39%
Sylvan Spring, Extra Braided, White	34%
Tate's Solid Braided	
Economy, Drab	P. S. 27%
Economy, White	P. S. 27%

Hercules, Drab	P. S. 80%
Hercules, White	P. S. 25%
White Cotton Braided, fair	P. S. 25%
Wire Picture—	
Braided or Twisted	80% to 80%
Corkscrews—See Screws, Cork.	
Corn Knives and Cutters—	
See Knives, Corn.	
Crackers, Nut—	
Acme	
Japanned, P. S.	30%
Nickel Plated, P. S.	30%
Table (H. & B. Mfg. Co.)	40%
Turner & Seymour Mfg. Co.	50%

Cradles—

50% to 50% to 52%

Crayons—

White Crayons, P. S.	70%
D. M. Steward Mfg. Co.	
Metal Workers', P. S.	25% to 25%
Railroad, P. S.	20% to 20%
Rolling Mill, P. S.	25% to 25%
Soapstone Pencils, P. S.	15% to 20%
See also Chalk.	

Creamery Pails—See Pails, Creamery.**Crow Bars—See Bars, Crow.****Curry Combs—**

See Combs, Curry.

Cutters—

Meat—	
American	30%
Nos.	1 2 3 4 5 6
Each	\$5 \$7 \$10 \$25 \$50 \$80
Enterprise	25%
Nos.	10 12 22 32 42
Each	\$3 \$2.50 \$4 \$4.15
Dixon's	\$4.00 to \$4.25
Nos.	1 2 3 4 5 6
Each	\$14.00 \$17.00 \$19.00 \$30.00

Draw Cut, each:

Nos. 5 6 7 8 \$50 \$75 \$80 \$225 20% to 25%

Hale's, P. S.

Nos. 11 12 13 \$70 \$80 \$90

Home No. 1, P. S.

Nos. 305 310 312 320 322 \$36.00 \$48.00 \$44.00 \$72.00 \$68.00

Miles Challenge, P. S.

Nos. 1 2 3 4 5 6 \$22.00 \$30.00 \$40.00

Triumph No. 505, P. S.

Nos. 505, P. S. \$20.00, 25% to 30%

Woodruff's, P. S.

Nos. 100 150 \$15.00 \$18.00

Chadborn's Smoked Beef Cutter, P. S.

Nos. 1 2 3 4 5 6 \$15.00 \$18.00

Enterprise Beef Shavers—

Tucker & Dorsey Mfg. Co.: 40%

Kraut Cutters.

Slaw Cutters, 1 Knife, P. S. \$21.00

Slaw Cutters, 2 Knife, P. S.

Nos. 1 2 3 4 5 6 \$20.00 \$20.00 40%

Tobacco

Appleton's... \$16.00, 60% to 10%

Donney's

Cincinnati... \$11.00, 35% to 40%

Johnson's

Penny's... \$12.00, 35% to 40%

Smith's Pat.

Nos. 1 2 3 4 5 6 \$12.00 \$12.00 20% to 10%

Diggers, Post Hole, &c—

Cronk's Post Bars, P. S. \$60.00

Eureka Diggers:

Western Jobbers, P. S. \$10.50 to \$11.50

Eastern Jobbers:

Fletcher Post Hole Augers, P. S. \$36.00

Gem, Improved P. S.

Gibbs' Columbia... \$9.00 to \$10.00 net

Gibbs' Huster

Gibbs' Imperial... \$10.00

Gibbs' National

Gibbs' Post Hole Digger... \$12.75

Kohler's Hercules

Kohler's Invincible... \$12.00

Kohler's Little Giant

Kohler's New Champion... \$12.00

Kohler's New Champion

Penny's... \$12.00, 35% to 40%

Samson

Schneider... \$12.00, 35% to 40%

Shimer's Hollow Handle

Nos. 1 2 3 4 5 6 \$12.00 \$12.00 50%

Vaughan's Post Hole Auger, P. S.

Nos. 1 2 3 4 5 6 \$12.00 \$12.00 50%

Dividers—See Compasses.**Dog Collars—See Collars, Dog.****Door Checks—**

See Checks, Door.

Door Springs—

See Springs, Door.

Drawers, Money—

Money Drawers, P. S. \$12.00 to \$30

Waddell's Improved No. 2

Waddell's Comb, Cutlery Case and Alarm Till \$12.50

Drawing Knives—

See Knives, Drawing.

Drills and Drill Stocks—

Automatic Boring Tools... \$1.75 to \$1.85

Bench Drills, Steam's

Blacksmiths'... \$1.75 to \$1.85

Blacksmiths'...

Breast, Bartholomew's... \$2.50 to \$2.50

Drill Bits or Bit Stock**Drills—See Augers and Bits.****Drill Chucks—See Chucks.****Dripping Pans—**

See Pans, Dripping.

Drivers, Screw—

Allard's Spiral, new list... 25%

Brace Screw Drivers... 25% to 10%

Buck Bros.' Screw Driver Bit... 37% to 35%

Clark's Pat... 38% to 40%

Cincinnati... 25% to 10%

Champion... 25% to 10%

Dialson's... 50%

Douglas Mfg. Co... 30% to 20%

Ellis' and Ratchet... 25% to 10%

Fray's Hol. H. die Set... No. 5, \$12.00, 45%

Gay & Parsons... 35%

Goodell's Automatic... 50% to 10%

Knapp & Cowles... 70% to 10%

No. 1... 70% to 10%

No. 2... 70% to 10%

No. 3... 60% to 10%

Nos. 4 and 60, Amos and Ideal... 60% to 10%

Kolb's Common Sense... P. S. \$6.00.

Mayhew's Black Handle... 50%

Mayhew's Monarch... 45% to 10%

P. S. & W... 70%

No. 1, Forged Blade... 60% to 10%

Nos. 20, 40 and 60... 60% to 10%

Screw Driver Bits, Parr's... P. S. \$6.25

Screw Driver Bits... P. S. \$6.25

Stanley R. & L. Co.'s

No. 54, Varnished Handles... 65% to 10%

Steam's... 70% to 10%

Syracuse Screw Driver Bit... 30% to 30%

C. T. Williamson Wire Novelty Co... 50%

Egg Beaters—See Beaters, Egg.**Egg Poachers—**

See Poachers, Egg.

Electric Bell Sets—

See Bells, Electric.

Emery—No. 4 to No. 54 to Flour, OF

48 gr. 150 gr. F.F.F.

Kegs, P. S. 48 5 3

Kegs, P. S. 48 5 3

Kegs, P. S. 48 5 3

Kegs, P. S. 48 5 3

Kegs, P. S. 48 5 3

Kegs, P. S. 48 5 3

Kegs, P. S. 48 5 3

Kegs, P. S. 48 5 3

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Kegs, P. S. 48 5 3

Kegs, P. S. 48 5 3

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Kegs, P. S. 48 5 3

Kegs, P. S. 48 5 3

Kegs, P. S. 48 5 3

Kegs, P. S. 48 5 3

Kegs, P. S. 48 5 3

Halters—

Cover's Adj. Rope Halters.....	40&25
Cover's Adj. Web Halters.....	35&25
Cover's Hemp Horse and Cattle Ties.....	50&10&25
Cover's Jute Cattle Ties.....	70&25
Cover's Jute Horse Ties.....	70&25
Cover's Rope, 7-14 in. Jute.....	70&25
Cover's Rope, 3-4 in. Hemp.....	50&25
Cover's Rope, Jute.....	60&10&10&25
Cover's Saddlery Works Halters.....	38&25
Cover's Saddlery Works Handy Web Halters.....	38&25
Cover's Saddlery Works Horse and Cattle Ties.....	38&25

Hammers—**Handled Hammers—**

Atha Tool Co.....	50&10&60
Buffalo Hammer Co.....	50&10&60
Humason & Beckley.....	50&10&60
Verree.....	50&10&60
Cheney's Claw.....	40&10
Cheney's Machinists' & Riveting.....	50&25
C. Hammond & Son.....	40&10&50
Magnetic Tack, Nos. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100.....	25&10&35
Maydole's Hammer.....	25&10&35
Peck, Stow & Wilcox.....	40&20&55
Fayette R. Plumb.....	40&10
Artisans' Choice, A. E. Nail.....	40&10
Horseshoe Turning Hammers.....	50
Regular Y. & P. A. E. Nail.....	50
Other Hammers.....	40&10&20
Sargent's.....	40&10&20
Warner & Nobles, new list.....	25&10

Heavy Hammers and Sledges—

3 lb and under.....	50
5 to 10 lb.....	80
Over 10 lb.....	80
Wilkinson's Smiths.....	10&10&10

Handcuffs and Leg Irons—**See Police Goods.****Handles—****Cross-Cut Saw Handles—**

Atkins', new list.....	40
Champion.....	15
Ely's Perfection.....	30
Sensible.....	50

Iron, Wrought or Cast—

Barn Door, 7' x 14'.....	20&5
Bronze Iron Drop Latches.....	70
Chest and Lifting.....	70
Door or Thumb.....	70

Per doz.....

Per doz.....	1.00 1.08 1.35 1.50
Jap'd Store Door Handles—Nuts.....	1.00
Plate, 1 1/2 in. no plate.....	1.00
Boggin's Latches.....	25

Wood—

Auger, assorted.....	50
Auger, large.....	70
File, assorted.....	25
Brad Awl.....	25
Apple Firmer Chisel, ass'd.....	50
Apple Firmer Chisel, large.....	50
Hickory Firmer Chisel, ass'd.....	50
Hickory Firmer Chisel, large.....	50
Socket Firmer Chisel, ass'd.....	50
Socket Framing Chisel, ass'd.....	50
Chisel, Fibre Head.....	35
Hammer, Hatchet, Axe, &c.....	40
Hoe, Rake, Shovel, &c.....	60
Pat. Auger, Douglass.....	1.25
Pat. Auger, Ives.....	1.00
Pat. Auger, Swan's.....	1.00
Saw and Plane.....	40
J. B. Smith & Co.'s Pat. File.....	50

Hangers—

Barn Door, New England.....	70
Barn Door, old patterns.....	70
Barry.....	50
Best Anti-Friction.....	60
Boss.....	60
Carrier Steel Anti-Friction.....	60
Champion.....	60
Chicago Anti-Friction.....	60
Climax Anti-Friction.....	60
Cincinnati Nos. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100.....	2.50

Crescent.....

Crescent.....	60
Cronk's Patent, Steel Covered.....	60
Duplex (Wood Track).....	60
Economy.....	60
Hamilton Wrought Steel Track.....	60
Interstate.....	60
Kidder's.....	60
Lane's New Standard.....	60
Lane's Parlor.....	60
Lane's Standard.....	60
Lundy, Steel Parlor.....	40
Magie.....	60
Matchless.....	60
Moody.....	45
Moore's Baggage Car Door.....	35
Moore's Elevator.....	35
Moore's Railroad.....	65
Nickel, Steel, Nos. 0, 25, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100.....	40

Orleans Steel.....

Orleans Steel.....	55
Paragon Nos. 5, 6, 7 and 8.....	30
Pendulum, Payson's.....	40
Perfection.....	50
Richards.....	30
Samson Steel Anti-Friction.....	55
Star.....	40
Stearns' Anti-Friction.....	20
Stearns' Challenge.....	25
Sterling.....	50
Terry's Ideal.....	50
Terry's Modern.....	50
Terry's Shield.....	60
Terry's Solid.....	60
Terry's Wrought Single Strap.....	50
Victor, No. 1, 15.00; No. 2, 10.00; No. 3, 13.00.....	50
Warner's Pat.....	20
Wild West.....	45
Zenith for Wood Track.....	55

Harness Snaps—See Snaps.**Hatchets—**

American Axe and Tool Co.....	40 & 10
Blood's.....	50
Hunt's.....	40 & 10
Hurd's.....	50
Maah's.....	50 & 50
Underhill's.....	210
C. Hammond & Son.....	10
Fayette R. Plumb.....	10
Collins.....	10
Buffalo Hammer Co.....	50 & 50
F. S. & W. Co.....	210
Sargent's & Co.....	210
sublime Lohoff & Co.....	210
Ten Eyck Edge Tool.....	210

Hay and Straw Knives**See Knives.****Hinges—****Blind Hinges—**

Clark's Nos. 1, 3, 5, 1888, Old Pattern.....	75&10&55
Nos. 1 and 3, Tip Pattern.....	75&10&55
No. 50 Buffalo Noiseless.....	40, 60
and 65.....	2, 1 1/2, 1 3/4
Buffalo Reversible, Nos. 2, 2 1/2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100.....	70&25
No. 1, Cottage, for wood only.....	80&10
No. 1, Diamond, for wood only.....	80&10
Dixie L. & P., Nos. 3, 2 1/2, 2 3/4, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100.....	75&10
No. 25, Empire Reversible.....	75&10
Lull & Porter, Nos. 3, 2 1/2, 2 3/4, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100.....	75&10
Mortise Gravity, Nos. 2, 4, 4 1/2, 6, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100.....	50
Huffer.....	50
Parker.....	75
North's Automatic Blind Fixtures, No. 2, for Wood, 9.00; No. 3, for Brick.....	10
Reading's Gravity.....	75
Sargent's Nos. 1, 3, 5, 11, 12, 13.....	75
Shepard's.....	75
Acme, Lull & Porter, Nos. 3, 2 1/2, 2 3/4, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100.....	75
1 1/2, 1, 0, 0, 4 and 5.....	75
Buffalo Gravity Locking, Nos. 3, 2 1/2, 2 3/4, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100.....	85
Champion Gravity Locking, No. 75.....	80
Clark's or Shepard's 1868, Old Pattern, Nos. 1, 3 and 5.....	75
Clark's or Shepard's Tip Pattern, Nos. 3 and 5.....	75
Double Locking, Nos. 20 and 25.....	70
Empire, Nos. 101 and 103.....	75
Niagara Gravity Locking, Nos. 1, 3 and 5.....	80
Noiseless, Nos. 50, 60, 65 and 55.....	75
O. S. Lull & Porter, Nos. 3, 2 1/2, 2 3/4, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100.....	75
Pioneer, Nos. 60, 45 and 54.....	75
Steamboat Gravity Locking No. 10.....	80

Gate Hinges—

Automatic.....	50
Clark's, Nos. 1, 2, 3.....	60
N. E. Reversible.....	60
N. Y. State.....	60
Shepard's Nos. 1, 2, 3.....	60
Western.....	60

Spring Hinges—

Acme.....	30
American.....	20
Bardsley's Patent Checking.....	15
Barker's Double Acting.....	25
Bommer's Japanese.....	30
Bommer's All other Kinds.....	30
Buckman's.....	15
Champion.....	60
Chicago.....	30
Columbia.....	50
Crown.....	20
Devore, No. L.....	10
Geer's Spring and Blank Butts.....	40
Gem.....	20
Ideal No. 3.....	18
J. G. C. Covered.....	30
Knorr.....	12
New Idea No. 1.....	10
New Idea No. 2.....	10
New Idea Dbl. Acting.....	45
No. 10 Matchless.....	60
No. 25 Unbreakable.....	60
Oxford.....	20
Reliable.....	60
Rex.....	13
Roy.....	15
Somson's.....	60
Stearns' Noiseless Floor Hinge.....	50
Surprise.....	12
Union Mfg. Co.....	25
Union Spring Hinge Co's list.....	18
March, 1888.....	18
Wiles, No. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100.....	13

Wrought Iron Hinges—

Corrug'd Strap and T.....	60
Strap and T.....	60
Plate Hinges.....	8, 10, 12 in.
Providence.....	over 12 in.
Roller Blind Hinges, Nos. 22 and 24.....	50
Roller Blind Hinges, Nos. 22 and 24.....	50
Roller Plate.....	55
Roller Raised.....	70
Screw Hook and Eye.....	14 in. 75¢
Screw Hook and Eye.....	16 in. 75¢
Screw Hook and Eye.....	18 in. 75¢
Screw Hook and Eye.....	20 in. 75¢
Screw Hook and Eye.....	22 in. 75¢
Screw Hook and Eye.....	24 in. 75¢
Screw Hook and Eye.....	26 in. 75¢
Screw Hook and Eye.....	28 in. 75¢
Screw Hook and Eye.....	30 in. 75¢
Screw Hook and Eye.....	32 in. 75¢
Screw Hook and Eye.....	34 in. 75¢
Screw Hook and Eye.....	36 in. 75¢
Screw Hook and Eye.....	38 in. 75¢
Screw Hook and Eye.....	40 in. 75¢
Screw Hook and Eye.....	42 in. 75¢
Screw Hook and Eye.....	44 in. 75¢
Screw Hook and Eye.....	46 in. 75¢
Screw Hook and Eye.....	48 in. 75¢
Screw Hook and Eye.....	50 in. 75¢
Screw Hook and Eye.....	52 in. 75¢
Screw Hook and Eye.....	54 in. 75¢
Screw Hook and Eye.....	56 in. 75¢
Screw Hook and Eye.....	58 in. 75¢
Screw Hook and Eye.....	60 in. 75¢
Screw Hook and Eye.....	62 in. 75¢
Screw Hook and Eye.....	64 in. 75¢
Screw Hook and Eye.....	66 in. 75¢
Screw Hook and Eye.....	68 in. 75¢
Screw Hook and Eye.....	70 in. 75¢
Screw Hook and Eye.....	72 in. 75¢
Screw Hook and Eye.....	74 in. 75¢
Screw Hook and Eye.....	76 in. 75¢
Screw Hook and Eye.....	78 in. 75¢
Screw Hook and Eye.....	80 in. 75¢
Screw Hook and Eye.....	82 in. 75¢
Screw Hook and Eye.....	84 in. 75¢
Screw Hook and Eye.....	86 in. 75¢
Screw Hook and Eye.....	88 in. 75¢

Plate.....334&25
Romer's Mfg. Co., 11st Mar. 20, 1889.....155
R. & L. Mfg. Co., 11st Mar. 20, 1889.....60&10@70
Sargent & Co., 11st Mar. 20, 1889.....50
Warner's Burglar Proof.....50
Yale.....net prices

Elevator—

Moore's.....334&25

Padlocks—

Wrought Iron Padlocks:
Brittan, Graham & Mathes, 11st Jan. 1894.....75
Mallory, Wheeler Co., 11st Jan. 1894.....75
Norwich Lock Mfg. Co., 11st June 1891.....50&25
Russell & Erwin Mfg. Co., 11st June 1891.....50&25
Sargent & Co., 11st January 1, 1894.....75
William Wilcox Mfg. Co., 11st January 1, 1894.....75&20
Ames Sword Co., up to No. 150.....50
Ames Sword Co. above No. 150.....50
Barnes Mfg. Co.....40&10@10
Champion Padlocks.....40
A. E. Deitz.....40
Eagle.....40
Eureka, Eagle Lock Co.....40&25
E. T. Frahm's Keystone Scandinavian 100 line.....90&40
120 line.....90&25
100 line.....65
510 line.....70&10
225, 610 and 209 lines.....70
All other numbers.....50&25
Horseshoe.....50
Hotchkiss.....50
Nock's.....50
Romer's Nos. 0 to 91.....50
Romer's Scandinavian, &c., Nos. 100 to 505.....155
Scandinavian.....90&50
Slaymaker, Barry & Co., No. 1010 line.....90&50
No. 41 line.....50
No. 61 line.....60
No. 21 line.....80
Star.....60
Yale Lock Mfg. Co.'s.....net prices

Sash, &c.—

Attwell Mfg. Co.....25&334
Champion Safety List January 1893.....70&5
Clark's No. 1, 110; No. 2, 33 gr. gr.....334
Common Sense, Jap'd, Cop'd and Br'ed.....gr \$4.00
Common Sense, Nickel Plated.....
Corbin's Daisy, 11st Feb. 15, 1886.....gr \$10.00
Davis Bronze, Barnes Mfg. Co.....70
Ferguson's.....334
Fish (Liesche's pat.), No. 100, gr. 88, No. 105, gr. 110.....50
Giant, 11st Jan. 1892.....70&5
Hammond's New Window Springs.....40
Huganin's New Sash Locks.....25&25
Huganin's Sash Balances.....25&25
Ives' Patent.....60&10&50
Kempshall's Gravity.....60
Kempshall's Model.....60&10@10
Monarch.....50
Payson's Perfect.....60&10@10
Reading.....60&10@10
Security.....60
Universal.....60
Victor.....60
Walker's.....10
Wolcott's.....60&10&5

Lumber Tools—

See Tools, Lumber.

Lustro—

Four-ounce bottles.....\$ doz, \$1.75; \$ gross.....\$17.00

Machines.

Boring—

Without Augers. Upright. Angular.
Boss, Carpenters' 3.60
Boss, Ship Builders' 3.85
Douglas.....50
Jennings.....50
Millers Falls.....750
Phillips' Patent with Auger.....7.00 7.50
Snell's, Rice's Pat. 5.50 6.75. 40&10@10

Fluting—

American, 5 in., \$3.00; 6 in., \$3.40; 7 in., \$4.50 each.....35
Combined Fluter and Sd Iron.....\$ doz \$15.00.....30
Crown, 4 1/2 in., \$3.50; 6 in., \$4.00; 8 in., \$6.50 each.....35
Crown Hand Fluter, No. 1, \$15.00; 2, \$12.50; 3, \$10.00; 4, \$8.25.....30
Crown Jewel 6 in.....\$3.50 each, \$5
Domestic Fluter.....each, \$1.50
Eagle, 2 1/2-inch Rolls, \$2.15.....35
Eagle, 3 1/2-inch Rolls, \$2.85.....35
Knox, 4 1/2-inch Rolls.....\$3.25 each
Knox, 6-inch Rolls.....\$3.80 each 35

Holding—

Moore's Anti-Friction Differential Pulley Block.....20
Moore's Hand Hoist, with Lock Brake 300
Moore's Rope Differential Pulley Block.....60
Marls & Beekley (Teal Patent).....30
See also Blocks.

Washing—

Fair and Square.....\$ doz \$42.00
Anthony Wayne, \$ doz, \$1.42; No. 3, \$38; No. 3, \$42.
Wayne American.....\$ doz \$38.00
Weissel.....\$ doz \$54.00
Western Star \$ doz, No. 2, \$36; No. 3, \$39

Mallets—

B. & L. Block Co., Hickory & L. V. 30&10@40
Vibre Head, Stearns.....334
Hickory.....20&10@20&10@10
Lignumvite.....20&10@20&10@10

Mattocks—Regular List.

standard Fibreware, No. 1, peck \$ dozen, \$3.50; 1/2-peck, \$3

Measures—

standard Fibreware, No. 1, peck \$ dozen, \$3.50; 1/2-peck, \$3

Meat Cutters—

See Cutters, Meat.

Menders, Harness—

Per doz.....\$2.50

Milk Cans—See Cans, Milk.

Mills—

Coffee—

Box and Side, List Jan. 1, 1888, 60&60&10%
Net prices are often made which are lower than above discount.
American, Enterprise Mfg. Co., 11st Jan. 17, 1893.....20
National List, Jan. 1, 1894.....30
Swift, Lane Bros.....30
Waddell's New Box Mills, Ideal Brand, New List.....60&60&10%

Mincing Knives—

See Knives, Mincing.

Molasses Gates—

See Gates, Molasses.

Money Drawers—

See Drawers, Money.

Mowers, Lawn—

Highest 10 in. 12 in. 14 in.
Grade \$4.00@5.25 \$4.50@6.00 \$5.00@6.75
Erad. \$3.00 \$3.25 \$3.50
Cheap.....2.25 2.50 2.75

Muzzles—

Safety.....\$ doz, \$3.00, 25%

Nails—

Cut and Wire. See Trade Report.
Wire Nails, Papered.
Association List, May 1, 1892.....85&10@
Hungarian, Finishing, Upholsterers', &c. See Tools.

Horse—

Nos. 6 7 8 9 10
A. C.....25 23 22 21 20 40&10
American.....94 94 94 94 94 net
Anchor.....23 21 20 19 18 35
Ausable.....28 26 25 24 23 40&52
Capwell.....19 18 17 16 15 10&5
C. B. K.....25 23 22 21 20 40
Champion.....25 23 22 21 20 40
Champlain.....28 26 25 24 23 40&52
Clinton, Fin.....19 17 16 15 14 10&52
Empire Bronzed.....1 1114
Essex.....23 21 20 19 18 35
Lyra.....94 94 94 94 94 net
Maud S.....25 23 22 21 20 40&52
Northwest'n.....25 23 22 21 20 40&52
Putnam.....23 21 20 19 18 35
Snowden.....94 94 94 94 94 net
Standard.....23 21 20 19 18 35
Vulcan.....23 21 20 19 18 35
Western.....23 21 20 19 18 35

Picture—

Brass Head, Combination List.....50&10
Brass Head, Sargent's List.....50&10
Porcelain Head, Combination List.....40&10
Porcelain Head, Sargent's List.....50&10
Niles' Patent.....40
Nail Pullers—See Pullers, Nail.

Nail Sets—See Sets, Nail.

Nut Crackers—

See Crackers, Nut.

Nuts—List Dec. 18, 1889.

Square, Hex.
Cold Punched.....5.00 6.10 off list
Hot Pressed.....5.50 6.50 off list
In packages of 100, add 1 1/2¢
net; in packages less than 100, add 1/4¢
b. net.

Oakum—

Best or Government.....\$ b 6 1/4@6 3/4
Navy.....\$ b 5 1/4@5 3/4
U. S. Navy.....\$ b 5 1/4@5 3/4

Oil Tanks—See Tanks, Oil.

Oiler—

Brass and Copper.....50&10@50&10
Zinc and Tin.....70&70&10
Broughton's Brass.....50
Broughton's Zinc.....60
Malleable, Hammers' Improved, No. 1, \$3.60; No. 2, \$4.00; No. 3, \$4.40
100&10@55
Malleable, Hammers' Old Pattern, same list.....45
Olmstead's Brass and Copper.....50
Olmstead's Tin and Zinc.....60
Prior's Pat. or Paragon Brass.....50
Prior's Pat. or Paragon Zinc.....60&10@10

Steel, Draper & Williams.....50

Willmot & Hobbs Mfg. Co., Steel Anti-Rust.....60
Openers, Can—
American.....\$ gross \$1.75@2.00
Champion.....\$ doz \$2.00.....50
Domestic.....\$ doz \$2.00.....50
Duplex.....\$ doz \$2.50.....45
Eureka.....\$ doz \$2.50, 10¢
Excelsior, No. 1 \$2.50; No. 2, \$1.60.....40
French, No. 4.....\$ doz \$2.25, 55¢@60¢
Iron Handle, No. 5.....gr \$6.00, 45¢@50¢
Lyman's.....\$ doz \$3.75, 20¢
Messenger's Comet.....\$ doz \$3.00, 25¢
Moore's.....70¢
Sardine Sissors.....\$ doz \$2.75@3.00
Sprague, No. 1, 65¢; 2, 60¢; 3, 55¢
Star.....\$ doz \$2.75
Universal.....\$ doz \$3.00.....55&5
World's Best.....\$ gross, No. 1, \$12.00; No. 2, \$24.00; No. 3, \$36.00.....50&10

Packing, Steam—

Rubber—
Standard, fair quality.....70&10@75
Inferior quality.....75&10@80
Extra.....80&10@85
Jenkins' Standard.....\$ b 80¢
N. Y. B. & P. Co., Double Diamond.....60
N. Y. B. & P. Co., Salamander.....45
N. Y. B. & P. Co., Carbon.....70&5

Miscellaneous—

American Packing.....94 10¢
Cotton Packing.....14¢@15¢
Italian Packing.....12¢@13¢
Jute.....6¢@7¢
Russia Packing.....13¢@14¢

Pails—

S. S. & Co.: 18-qt., \$7.00; 20-qt., \$7.25

Galvanized Pails—

Light. Heavy.
10 Quart.....\$2.00@2.25 \$2.25@2.50
12 Quart.....2.25 2.50 2.50@2.75
14 Quart.....2.50 2.75 2.75@3.00

Galvanized Buckets—

Fire. Well.
10 Quart.....\$2.50@2.75
12 Quart.....2.75 3.00 \$2.25@2.50
14 Quart.....3.00 3.25 2.50@2.75

Indurated Fiber Ware

Fire Pails, deep.....\$ doz \$4.80
Fire Pails, round bottom.....\$ doz \$5.40
Milk, 14 qt.....\$ doz \$5.40
Stable, 14 qt.....\$ doz \$6.00
Star Pails, 12 qt.....\$ doz \$4.20

Standard Fiber Ware—

Buggy Pails.....\$3.00
Chamber Pails, 14 qt.....\$7.00
Dairy Pails, 14 qt, \$ doz, 3.75 4.25
Fire Pails, No. 1, 12 qt, \$ doz 3.75
Fire Pails, No. 2, 14 qt, \$ doz 4.25
Horse Pails.....4.00
Slop Jars (bal. trap).....7.50 8.50
Sugar Pails.....5.00 5.50
Water Pails, 12 qt, \$ doz, 3.15 3.75

Pans—

Dripping—

Large sizes.....\$ doz \$5
Small sizes.....\$ doz \$4
Silver & Co. (Covered).....40%

Fry—

Standard List:
No.....0 1 2 3 4 5
\$ doz, \$3.00 \$3.75 \$4.25 \$4.75 \$5.25
No.....6 7 8 9 10
\$ doz, \$5.00 \$5.00 \$5.00 \$5.00 \$5.00
Polished, regular goods.....75¢@75¢@100¢
Aome Fry Pans.....60&25

Dust—

Steel Edge, No. 1.....\$ doz \$1.75

Roasting and Baking—

Columbian S. S. & Co.: Nos. 10, \$2; 20, \$2.25; 30, \$2.50 each.....60&10

Paper and Cloth—

Sand and Emery—

List April 19, 1888.....50&10@60
Shibley's Emery and Crocus Cloth.....30%

Parers—

Apple—

Advance.....\$ doz \$4.25
Baldwin.....\$ doz 4.75
Beecham.....each 5.00
Daisy.....\$ doz 4.00
Dandy.....each 7.50
Ediphe.....\$ doz 4.00
Eureka, 1888.....each 16.00
Family Bay State.....\$ doz 12.00
Favorite.....\$ doz 5.00
Gold Medal.....\$ doz 6.00
Ideal.....\$ doz 4.00
Improved Bay State.....\$ doz 27.00@30.00
Little Star.....\$ doz 4.50
Monarch.....\$ doz 13.50
New Lightning.....\$ doz 5.50
Orion.....\$ doz 4.00
Perfection.....\$ doz 3.00
Pomona.....\$ doz 4.00
Reading 72.....\$ doz 3.75
Reading 78.....\$ doz 6.75
Rocking Table.....\$ doz 6.00
Turn Table.....\$ doz 4.50
Waverly.....\$ doz 13.50
White Mountain.....\$ doz 4.00

Potato—

Antrim Combination.....\$ doz \$5.50
Hoosier.....\$ doz \$13.50
Saratoga.....\$ doz \$5.50
White Mountain.....\$ doz \$4.50

Pencils, Soapstone—

Pickers, Fruit—

Price Fruit Pickers.....50%

Picks—

Railroad Adze Eye, 5 to 6, \$12.00; 6 to 7, \$13.00.....60&10@70

Picture Nails—

See Nails, Picture.

Pinking Irons—

See Irons, Pinking.

Pins—

Bow—

Humason, Beckley & Co.'s.....60&10
Peck, Stow & W. Co.'s.....50&10@50&10
Sargent & Co.'s, \$17 and \$18.....60&10

Escutcheon—

Brass.....70¢
Iron, list Nov. 11, 1885.....75%

Pipe, Wrought Iron—

List April 13, 1893.
1 1/2 and under, Plain.....67¢@10&10@10
1 1/2 and under, Galv.....60&10@10
1 1/2 and over, Plain.....67¢@10&10@10
1 1/2 and over, Galv.....67¢@10&10@10
Boiler Tubes, list Oct. 24, 1892.....65&10@10
Casing, list Nov. 16, 1892, 52¢@10&10@10
Cold Drawn Seamless Steel Tubing.....50¢
Inserted Joints Casing, list Nov. 16, 1892.....47¢@10&10@10
Steel Boiler Tubes.....27¢@10&10@10

Planes and Plane Irons—

Wood Planes—

Molding.....50&10
Bench, First quality.....55&10
Bench, Second quality.....60&10@10
Bailey's (Stanley R. & L. Co.).....50&10

Iron Planes—

Birmingham (Stanley R. & L. Co.).....50&10
Chaplin's Iron Planes.....50&10
Davis' Iron Planes.....50&10
Gage Tool Co.'s Self-Setting.....20&10@10
Miscellaneous Planes (Stanley R. & L. Co.).....25&10
Sargent's.....60&10@10
Standard Tool Co.....50&10
Steers' Iron Planes.....50&10

Plane Irons—

Albura Thistle.....30&10@30&10@10
Buck Bros.....25.00@25.50
Butcher's.....25.00@25.50
Ohio.....30&10@30&10@10
Sandusky.....50&10
Stanley R. & L. Co.....50&10
L. & J. White.....25

Plates—

Felloe.....\$ doz \$40&40

Pliers and Nippers—

Button's Patent.....60%
Carver's Pat. Wire Cutters.....20
Cronk's 8 in., \$15.00; 10 in.....20
Cronk's Button Pattern.....60&10
Cronk's Currier Pliers.....60&10
Eureka Pliers and Nippers.....40%
Gas Pliers.....60%
Gas Pliers, Custer's Nickel Plated.....60&10
Hall's No. 2, 5 in., \$13.50; No. 4, 7 in., \$21.00
Humason & Beckley Mfg. Co.....60&10
Lindsay's Giant.....334
Morrill's Parallel.....\$ doz, \$12.00, 30&25
P. S. & W. Cast Steel.....60&10
P. S. & W. Timmers' Outting Nippers, add 6¢.....10
Russell's Parallel.....25%

Plumbs and Levels—

Regular List.....75&10@80
Cook's.....40&10
Davis Inclinoesters.....10&10
Davis Iron Levels.....80
Dixon's.....50
Pocket Levels.....70&10@70&10@10
Stanley's Duplex.....20&10
Stanley's Handy.....20&10

Poachers, Egg—

Buffalo Steam Egg Poachers, \$ doz, No. 1, \$6.00; No. 2, \$9.00.....334
Silver & Co., 6-Ring, \$ doz, \$4.00; 3-Ring.....\$3.00

Pokes, Animal—

Bishop's American.....\$ doz \$3.00
Bishop's I. X. L.....\$ doz \$6.00
Bishop's Steel Monarch.....\$ doz \$5.00
Bishop's Ohio.....\$ doz \$6.00
Bishop's Pioneer.....\$ doz \$5.75
Bolding.....\$ doz \$5.00
Buckeye, Single Stale.....\$ doz \$2.75
Eagle, Double Stale.....\$ doz \$5.75
Eagle, Single Stale.....\$ doz \$3.75
Metallic Horse Poke.....\$ doz \$6.00

Police Goods—

Daley's Improved Handcuffs, 2 Hands, Polished, \$ doz, \$48.00; Nickelplated, \$75.00; 3 hands, Polished, \$ doz \$75.00; Nickelplated, \$84.00.....25
J. P. Lovell's Police Goods.....25
Newhall Ship Chandlery Co., Handcuffs, \$15.00 \$ doz.....25
Towers.....25%

Polish—

Gaston's Silver Compound.....334
Prestoline.....30
Prestoline Paste.....334

Metal—

Paste, 1/2 lb tins.....\$ gr. \$14.40
Paste, 1 lb tins.....\$ gr. \$36.00
Liquid, 1/2 pint.....\$ gr. \$36.00
Powder, 1 lb.....\$ gr. \$36.00
Wynn's White Silk, 1/2 pt. cans \$ doz, \$1.75

Stove—

Black Eagle Benzine Paste, 5 and 10 lb cans.....15
Black Flag, 5 and 10 lb pails.....\$ gr \$7.50
Black Flag, liquid, in bottles, \$ gr \$7.50
Black Jack Water Paste, 5 and 10 lb cans.....124
Connell's Liquid Stove Polish, \$ gr \$9.00
Connell's Paste Stove Polish, \$ gr \$9.00
Boynton's Noon Day.....\$ gr \$13.00
Crown Paste.....\$ gr \$7.50
Crown Paste in 5 and 10 lb pails, \$ 12
Diamond O. K. Enamel.....\$ gr \$19.00
Diamond Rock Nickel Cleaner.....\$ gr \$10.00
Joseph Dixon's.....\$ gr \$9.00, 10¢
Dixon's Plumbago.....\$ gr \$2.50
Fireclad.....\$ gr \$6.00, 10¢
Gem.....\$ gr \$4.50, 10¢
Gold Medal.....\$ gr \$8.00, 35¢
Japanese.....\$ gr \$5.50
Jax Black.....\$ gr \$5.50
Lustro.....\$ gr \$4.75
Nickel Plate Paste.....\$ gr \$7.00
Parlor Pride Stove Enamel, \$ gr, Raven Liquid, 6 oz. bottles.....\$ gr \$8.00

Raven Liquid, 8 oz. bottles.....\$ gr \$9.00

Raven Paste in 5 lb. pails (cases of 15, 6 pails).....\$ gr \$10.00

Raven Water Polish, large boxes.....\$ gr \$7.50

Rising Sun, 5 gr lots.....\$ gr \$5.50
Ruby.....\$ gr \$3.75
Wynn's Black Silk, 5 lb pail.....\$ b 15¢
Wynn's Black Silk, 1 lb box.....\$12.00
Wynn's Black Silk, 8 oz. box.....\$12.00
Yates' Liquid, 2 3/4 lb 10 gal.....\$ gal. \$0.70 .60 .50 .40

Yates Standard Paste Polish, 10 lb cans, \$ 124; 10 lb cans, \$ 10

Poppers, Corn—

Round or Square, 1 qt.....\$ doz \$1.00; \$ gr \$3.00
2 qt.....\$ doz \$1.00; \$ gr \$3.00
3 qt.....\$ doz \$1.50; \$ gr \$4.00

Post Hole and Tree Augers and Diggers—

See Diggers, Post Hole, &c.

Potato Parers—

See Parers, Potato.

Pots—

Glue—

Enameled.....40&10@40&10@50
Family, Elmer's.....40
Family, F. O.'s "Handy".....40
Tinned.....40&10@40&10@50

Powder—

In Canisters—

Duck, 1 lb each.....45¢
Fine Sporting, 1 lb each.....45¢
Rifle, 1 lb each.....45¢
Rifle,

Pullers Nail—
 Collapsing.....\$ doz., \$24.00, 40%
 Economy.....\$ doz., \$5.50 to \$8.00
 Giant, No. 1.....\$ doz., \$18.00, 10% to 15%
 Giant, No. 2.....\$ doz., \$18.00, 10% to 15%
 Fellow.....\$ doz., \$9.00, 25% to 30%
 Scranton.....\$ doz., \$18.00, 30% to 35% to 10%

Pulleys—
 Brass Screw.....70%
 Hay Fork, "Anti-Friction," 5 in. solid.....\$3.70
 Hay Fork, "F" Common and Patent Bushed.....20%
 Hay Fork, Moore's Anti-Friction 5 in. Wheel, \$ doz., \$12.00.....40%
 Hay Fork, Reed's Self-Lubricating.....60%
 Hay Fork, Solid Eye, \$4.00; Swivel.....\$2.50
 Hay Fork, Stearns' Nos. 15, 25, 56, 68, 60%
 Hay Fork, Tarbox Pat. Iron.....20%
 Hot House, Awning, &c.....60% to 70%
 Japanned Clothes Line.....60% to 10%
 Japanned Screw.....70% to 10%
 Japanned Side.....70% to 10%
 Moore's Ceiling End, Anti-Friction.....50%
 Moore's Dumb Waiter, Anti-Friction.....50%
 Moore's Electric Light.....35% to 40%
 Moore's Side, Anti-Friction.....60%
 Sash (Auger Mortise).....60%
 Common Sense.....60%
 Acme.....60%
 Ideal, Nos. 2, 4, 10 & 15.....60% less 1¢
 Star.....60%
 On bbl. lots extra 5%
 Shade Rack.....45%
 Shepard's Niagara, No. 25.....\$ doz 23¢ net
 Tackle Blocks—See Blocks.

Pumps—
 Olstern, Best Makers.....60% to 10%
 Fitcher Spout, Best Makers.....70% to 75%
 Fitcher Spout, Cheaper G'ds.....75% to 80%
 Myers' Pumps, low list.....50%

Punches—
 Avery's Revolving.....40%
 Avery's Sawcut Punch—See Sawcut
 Bemis & Call Co.'s Cast Steel Drive.....50% to 55%
 Bemis & Call Co.'s Check.....55%
 Bemis & Call Co.'s Spring.....50% to 55%
 Bemis & Call Co.'s Springfield Socket.....65%
 Niagara Hollow Punches.....20% to 25%
 Niagara Solid Punches.....55%
 Rice Hand Punches.....15%
 Saddler's or Drive, good.....\$ doz. 60¢ to 65¢
 Spring, good quality.....\$ doz., \$2.50 to \$3.00
 Spring, Leach's Pat.....15%
 Solid Timmers, P., S. & W. Co., \$ doz.....\$1.44
 Timmers' Hollow Punches, P., S. & W. Co.....20% to 25%

Rail—
 Barn Door, Light, In.....\$ 1/2 1/2 1/2
 Per 100 feet.....\$1.75 2.10 2.75
 B. D. for N. E. Hangers.....

Sm. Med. Large.
 Carrier, double braced. Steel Rail.....\$ 12.00 2.50 8.00 Net
 foot.....3 1/2 4 1/2
 Lundy Parlor Door, Planed Edge, \$ ft. 7 1/2
 Moody Steel Rail, \$ ft. 5 1/2.....45¢ to 55¢
 Moore's Steel Rail.....35%
 Sliding Door, Branded, \$ ft. 6 1/2.....35%
 Sliding Door, Branded, \$ ft. 6 1/2.....35%
 Sliding Door, Wrt Brass, \$ ft. 6 1/2.....40%
 Terry's Steel Rail.....\$ ft. 4 1/2
 Victory Track Rail, 7 1/2 \$ foot.....50¢ to 1 1/4

Rakes—
 Cast Steel, Association G'ds.....70% to 75% to 80%
 Cast Steel, outside G'ds.....70% to 75% to 80%
 Malleable, good.....70% to 75%
 Malleable, low grades.....70% to 75%
 Fort Madison Prize Bow Brace and Peerless.....65%
 Fort Madison Steel Tooth Lawn Rake, \$3.00.....25%
 Gibbs.....\$ doz., \$4.30
 Gibbs' Acme Lawn Rake.....\$ doz., \$4.70
 Gibbs' Canoe Lawn Rake.....\$ doz., \$5.75
 Gibbs' Crown Lawn Rake, No. 1.....\$ doz., \$4.30
 Gibbs' Crown Lawn Rake, No. 2, \$5.30, \$ doz., \$4.90
 Gibbs' Favorite Lawn Rake.....\$ doz., \$3.90
 Gibbs' Hustler No. 0.....\$ doz., \$4.25
 Gibbs' Hustler No. 1.....\$ doz., \$4.40
 Onoida Lawn Rake.....\$ doz., \$6.00

Razors—
 Campbell Cutlery Co.....50%
 Electric Cutlery Co.....Net prices
 Galvanic.....\$ doz., \$16.00
 Jordan's AAAI, new list.....Net prices
 Jordan's Old Faithful, new list.....Net prices
 J. R. Torrey Razor Co.....Net prices
 Wostenholm and Butcher, \$10 to 20.....10%

Razor Straps—
 See Straps, Razor.

Reels—
 Clothes Line—

Stearns'.....33 1/2 to 10%
Fishing—
 Hendryx Aluminum German Silver, Gold, Bronze, Silver Rubber, Popul and Salmon, Single Action, Multiplying and Quadruple, all sizes.....25%
 Hendryx Single Action Series, 102P and PN, 202P and PN, 102PR and PRN, 202PR and PRN, 502P and PN, 802 and 802N, 02084N, Competitor.....50%
 Hendryx Multiplying and Quadruple Series, 3004N and PN, 4N and PN, 2004N, 2904P and PN, 002904PN, 0924 and 0924N, 5008N and PN.....40% to 10%

Registers—
 Moore's Bronze Finishes.....70%
 Moore's Electroplated.....75%
 Moore's Japanned.....75%
 Moore's Solid Bronze.....65%
 Moore's Stove Pipe.....33 1/2

Rings and Ringers—
 Bull Rings—

Billrich Edw. Co., White Metal, low list.....50% to 50% to 10%
 Hotchkiss' low list.....30%
 Humason, Beley & Co.....70% to 10%
 Peck, Stow & W. Co.'s.....50% to 10% to 10%
 Sargent's.....75% to 10%
 Union Nut Co.....65%

Hog Rings and Ringers—
 Note.—The market on Hog Rings and Ringers is in a demoralized condition and prices are low and irregular. We therefore withdraw quotations for the present.

Rivets and Burrs—
 Copper.....60% to 60% to 10%
 Coppered Iron, Betina Brand.....50% to 55%
 Iron Norway, list Nov. 17 '87.....60% to 10%
 Second Quality.....70% to 70% to 5%

Rivet Sets—See Sets.
Roasting and Baking Pans—See Pans, Roasting and Baking.

Rods—
 Star, Black Walnut.....\$ doz 40¢
 Star, Brass.....25% to 30%

Rollers—
 Acme Moore's Anti-Friction.....55%
 Barn Door, Sargent's list.....60% to 10%
 Moore's Barn Door Stay.....60%
 Union Barn Door Roller.....70%
 Thompson Mfg. Co.'s Lawn Rollers.....80%

Rope—The following prices are f. o. b., New York or factory, and are shaded 1/4¢ on large lots; terms, 1 1/2% for cash.
 Manila, 7-16 in. diam. and larger.....7 1/4 to 7 1/2
 Manila, 1/4 and 5-16 in.....7 1/4 to 8
 Manila, Tarred Rope.....8 1/4 to 8 1/2
 Manila, Hay Rope, Med'm.....7 1/4 to 7 1/2
 Sisal, 7-16 in. and larger.....5 1/4 to 5 1/2
 Sisal, 1/4 in. and 5-16 in.....5 1/4 to 5 1/2
 Sisal, Hay Rope.....5 1/4 to 5 1/2
 Sisal, Tarred Rope.....5 1/4 to 5 1/2
 Sisal, Medium Lath Yarn.....4 1/4 to 5
 New Zealand.....5 1/4 to 5 1/2
 New Zealand, 1/4 inch.....5 1/4 to 5 1/2
 New Zealand, 1/4 and 5-16 in.....5 1/4 to 5 1/2
 New Zealand, Hay Rope.....5 1/4 to 5 1/2
 New Zealand, Tar'd Rope.....5 1/4 to 5 1/2
 Cotton Rope.....1 1/4 to 1 1/2
 Jute Rope.....5 1/4 to 6

Wire—
 List February, 1892. All kinds. 50¢ to 50¢ to 5%

Rules—
 Boxwood.....\$0.10 to \$0.10 to \$0.10 to 10%
 Ivory.....60% to 10%
 Starrett's Steel Rules and Straight Edges.....25% to 10%

Sad Irons—See Irons, Sad.

Sand and Emery Paper and Cloth—
 See Paper and Cloth.

Sash Cord—See Cord, Sash.

Sash Locks—See Locks, Sash.

Sash Weights—
 See Weights, Sash.

Sausage Stuffers or Fillers—See Stuffers or Fillers, Sausage.

Saws—
 Note.—Extra 5¢ to 10% often given.

Atkins' Circular.....50% to 10%
 Atkins' Cross Cuts, new list.....40%
 Atkins' Mulay, Mill and Drag.....50% to 10%
 Atkins' One-Man Saw.....40%
 Atkins' Wood Saws.....45% to 55%
 Diaston's Circular.....45% to 55%
 Diaston's Cross Cut, list Jan. 1, '93, 40¢ to 50¢
 Diaston's Hand.....25%
 C. E. Jennings & Co.'s.....25%
 Peace Circular and Mill.....45% to 55%
 Peace Cross Cuts, list Jan. 1, '93.....45% to 55%
 Peace Hand, Panel and Rip.....45% to 55%
 Richardson's Circular and Mill.....45% to 55%
 Richardson's X Cuts, list Jan. 1, '93, 45¢ to 10¢
 Richardson's Hand, &c.....25% to 55%
 Simonds' Circular Saws.....45% to 55%
 Simonds' Crescent Ground Cross Cut Saws.....30%
 Simonds' Gang, Mill, Mulay and Drag.....20%
 Wheeler, Madden & Clemson Mfg. Co. Cross Cuts, list Jan. 1, 1893.....45% to 10%
 Hand, Panel and Rip.....30% to 10%
 Woodrough & McFarlin. Cross Cuts, list Jan. 1, 1893.....45% to 10%
 Hand, Panel and Rip.....25% to 10%

Hack Saws—
 Eureka and Crescent.....25%
 Griffin's, complete.....40% to 10%
 Griffin's Hack Saw Blades.....40% to 10%
 Star Hack Saws and Blades.....25%

Scroll—
 Barnes' Builders' and Cab Makers' \$15, 25¢
 Barnes' Scroll Saw Blades.....35%
 Lester, complete, \$10.00.....25%
 Rogers, complete, \$4.00.....25%

Saw Frames—
 See Frames, Saw.

Saw Sets—See Sets, Saw.

Saw Tools—See Tools, Saw.

Scale Beams—
 See Beams, Scale.

Scales—

Chatillon's Eureka.....25%
 Chatillon's Favorite.....40%
 Chatillon's Grocers' Trip Scales.....50%
 Family, Turnbulla.....30% to 80% to 10%
 Hatch, Counter, No. 17, good quality.....\$ doz \$17.00 to \$18.00
 Hatch, Tea, No. 181.....\$ doz \$8.00 to \$8.50
 Riehle Bros' Platform.....\$ ft. \$4.00 to \$4.10
 Union Platform Plain.....\$2.00 to \$2.10
 Union Platform, Striped.....\$2.15 to \$2.25

Scissors, Fluting.....45%

Scrapers—

Adjustable Box Scraper (S. R. & L. Co.) \$5.00.....40% to 10%
 Box, 1 Handle.....\$ doz \$2.00
 Box, 2 Handle.....\$ doz \$3.00 to \$4.00
 Defiance Box and Ship.....20% to 10%
 Foot.....50% to 10% to 95%
 Ship, Common.....\$ doz \$3.50
 Ship, R. I. Tool Co.....\$ doz \$4.00

Screen Window and Door

Frames—See Frames

Screw Drivers—
 See Drivers, Screw.

Screws—
Bench and Hand—

Bench, Iron.....55% to 10% to 55% to 10% to 10%
 Bench, Wood, Beech.....\$ doz \$2.25
 Bench, Wood, Hickory.....20% to 10%
 Hand, Wood.....25% to 10% to 25% to 10%
 Hand, Grand Rapids, list.....35%
Coach, Lag and Hand-Rail—
 Lag, Blunt Point, list Jan. 1, 1890.....80% to 10% to 80% to 25%
 Coach and Lag, Gimlet Point, list Jan. 1, 1890.....80% to 10% to 80% to 25%
 Hand Rail, Am. Screw Co.....75%
 Hand Rail, H. & B. Mfg Co.....70% to 10% to 75%
 Hand Rail, Sargent's.....70% to 10%

Jack Screws—
 Millers Falls.....50% to 10% to 10%
 Millers Falls, Roller.....60% to 10%
 P., S. & W.....35%
 Sargent.....70%
 Stearns.....40% to 10%

Cork—
 Detroit Cork Screw Co.....33 1/4%
 Humason & Beckley Mfg. Co.....40% to 10% to 40%
 Williamson's.....33 1/4 to 33 1/2 to 5%
 Williamson's Forged Worm, Applewood Handle, \$ doz., \$5.00; Rosewood, \$5.50.....40%

Machine—
 Flat Head Iron.....70%
 Round Head Iron.....65%

Wood—
 List January 1, 1891.
 Flat Head Iron.....80%
 Round Head Iron.....75%
 Round Head Iron.....75%
 Round Head Iron.....75%
 Flat Head Bronze.....80%
 Round Head, Bronze.....75%
 Rogers' Drive Screws.....32 1/2 to 40%

Scroll Saws—See Saws, Scroll.

Scythes—

Grain.....40% to 50% to 40% to 10%
 Grass.....40% to 50%

Scythe Snaths—
 See Snaths, Scythe.

Sets—

Awl and Tool—
 Aiken's Sets, Awls and Tools, No. 20, \$ doz \$10.00.....60% to 60% to 5%
 Common Brad Sets, No. 42, \$10.50; No. 43, \$12.50.....70% to 10% to 5%
 Fray's Adj. Tool Hds., Nos. 1, \$12; 2, \$18; 3, \$12; 4, \$7; 5, \$7.....50%
 Henry's Combination Hdt., \$ doz \$6.50
 Millers Falls Adj. Tool Hds., No. 1, \$ doz \$12; No. 5, \$18.....25%
 Stanley's Excelsior, No. 1, \$7.50; No. 2, \$4.00; No. 3, \$5.50.....30% to 10%

Nail—
 Round.....\$ gr. \$3.25
 Square.....\$ gr. \$4.00 to \$4.25
 Buck Bros.....27 1/2%
 Cannon's Diamond Point.....\$ gr. \$12, 20%

Rivet—
 Regular list.....70%

Saw—

Atkin's Criterion.....\$ doz No. 1, \$6.00
 Atkin's Genuine.....\$13.00, 50% to 10% to 60%
 Atkin's Imitation.....\$ doz \$3.00 to \$3.25
 Atkin's Sever.....\$ doz No. 1, \$6.00
 Avery's Saw Set and Punch.....50%
 Bemis & Call Co.'s Cross Cut.....30% to 55%
 Bemis & Call Co.'s Plate.....20%
 Bemis & Call Spring Hammer.....30% to 55%
 Common Lever.....\$ doz \$2.00, 45% to 50%
 Crescent.....\$ doz \$3.00
 Croissant (Keller), No. 1, \$15.00.....40% to 10% to 50%
 Diaston's Star.....25%
 Hammer, Bemis & Call Co.'s new Pat. 45%
 Hammer, Hotchkiss.....\$5.50, 10%
 Hart's Pat. Lever.....30%
 Kohler's Giant Royal.....\$ doz \$12.00
 Kohler's Royal.....\$ doz \$7.00
 No. 10, \$15.50; No. 4, \$15.....40% to 20%
 Leopold.....40% to 10% to 50%
 Lloyd's Acme.....\$ doz \$15, 40% to 10%
 Morrill's No. 1, \$15.00.....40% to 20%
 Nos. 3 and 4, Cross Cut, \$23.00.....40% to 20%
 No. 5, Mill, \$31.00.....40% to 20%
 No. 10, \$15.50.....40% to 20%
 No. 11, \$15.00.....40% to 20%
 Nash's.....20% to 10% to 40%
 Stillman's Genuine.....\$ doz \$5.00 to \$7.75, 40% to 5%
 Stillman's Pattern, Hand, \$ doz \$3.25; Cross Cut, \$5.50.....55% to 55% to 10%
 Taintor Positive.....\$ doz \$18, 50%

Sharpeners, Knife—

Applewood Handles.....\$ doz \$3.00, 50%
 Rosewood or Cocobola, \$ doz \$9.00 50%
 Tanite Mills.....\$ gr., \$14.40. 25% to 33 1/4%

Shaves, Spoke—

Iron.....45%
 Wood.....30%
 Bailey's (Stanley R. & L. Co.).....50% to 10%
 Cincinnati.....25% to 10%
 Goodell's \$ doz \$9.00.....25%
 Stearns.....40% to 10%

Shears—

Acme Cast Shears.....10% to 10% to 10% to 10%
 American (Cast) Iron.....60% to 80% to 5%
 Barnard's Lamp Trimmers.....\$ doz \$3.75
 Cast Steel Trimmers.....
 First quality.....80% to 10% to 80% to 10%
 Campbell Cutlery Co., \$ ap. d.....\$ doz \$10.00 to \$10.50
 Nickel Plated.....65%
 Claus brand, Japanned.....70%
 Claus brand, Nickel, same list.....60%
 Clipper.....10% to 10% to 10% to 10%
 Diamond Cutlery Co.....40% to 10%
 Dayton Cast Shears.....10% to 10% to 10%
 Galvanic \$ doz 9 in., \$ doz \$1.00, \$ nob Hatch Cutlery Co. Solid Steel Forged.....60% to 10% to 10%

Heinisch's, list Dec. 1881.....60% to 10% to 60% to 10% to 10% to 5%

Heinisch's Tailor's Shears.....35% to 40%

Hove & Hulbert, Solid Forged Steel.....40%

Seymour's, list Dec. 1881.....60% to 10% to 60% to 10% to 10% to 5%

Victor Cast Shears.....75% to 10% to 75% to 10% to 5%

Timmers' Snips—
 Cast Handle, Laid with Steel.....40%
 Niagara Snips and Shears.....20% to 10%
 Wrt. Handles, Steel Blades.....\$ ft. (80% to 10%)

Pruning Shears and Hook—
 Disston's Combined Pruning Hook and Saw.....\$ doz \$18.00, 20% to 10%
 Disston's Pruning Hook, \$ doz \$12.00, 20% to 10%
 Dunlap's Saw and Chisel, \$ doz \$8.50, 30%
 Henry's Pruning Shears, \$ doz \$4.25, 60% to 60%
 E. S. Lee & Co.'s Pruning Tools, 50% to 10% to 70%
 Levin Pruner No. 1, \$15.00 \$ doz. 40% to 5%
 Levin Pruner No. 2, \$21.00 \$ doz. 40% to 5%
 J. Mallinson & Co., No. 1, \$5.25; No. 2, \$7.25
 Pruning Shears, Henry's Pat. \$ doz. \$3.50 to \$4.00
 P. S. & W. Co.....60%
 Wheeler, M. & C. Co., Combination.....\$ doz \$12.00

Tinners, &c.—

Shears and Snips (P. S. & W.).....20% to 25%
 Snips, J. Mallinson & Co.....33 1/4%

Sheaves—

Sliding Door—
 Corbin's list.....60% to 10% to 2%
 M. W. Co., list July, 1888.....50% to 10% to 60% to 5%
 Moore's Anti-Friction.....60%
 Patent Roller.....60% to 10% to 2%
 Patent Roller, Hatfield's.....75%
 R. & E., list Dec. 18, 1885.....55% to 20%
 Russell's Anti-Friction, list Dec. 18, 1885.....60% to 25%

Sliding Shutter—
 Reading list.....60% to 10% to 10%
 R. & E., list Dec. 18, 1885.....60% to 10% to 25%
 Sargent's list.....70%

Shells—
 Brass Shot Shells, Club, Rival, Climax.....65% to 2%
 Brass Shot Shells, 1st quality.....60% to 2%
 First quality 4, 8, 10 and 12 gauge.....25% to 10% to 2%
 First quality Rival, Club and Climax brands, 14, 16 and 20 gauge (\$7.50 list).....20% to 10% to 2%
 Prize.....40% to 2%
 Smokeless brand, 12, 10, 16 gauge.....35% to 10% to 2%
 Star, Club, Rival and Climax Brands.....35% to 10% to 2%
 Trap brand, 12 and 10 gauge, 33 1/4% to 10% to 2%

Shells, Loaded—
 Standard list, July 19, 1890.....40% to 10% to 40% to 10% to 10% to 10%
 2% cash, 10 days.

Ship Tools—
 L. & J. White.....20% to 5%

Shoes, Horse, Mule, &c.—

Horse—
 Burden's, Perkins', Phoenix, Standard, Diamond State, Bryden's Boss and Crescent.....\$5.00 to \$4.00
 Bryden's Frog Pressure, at factory \$5.00

Mule—
 Add \$1 per keg to above prices.

Ox Wrought—
 Ton lots.....\$ 9 1/2
 1000 lb lots.....\$ 9 1/2
 500 lb lots.....\$ 10 1/2

Shot—
 Small lots.

Drop, up to B, 25-b bag.....\$1.15
 Drop, up to B, 5-b bag.....35%
 Drop, B and larger, 25-b bag.....1.40
 Drop, B and larger, 5-b bag.....1.40
 Buck and Chilled, 25-b bag.....1.40
 Buck and Chilled, 5-b bag.....1.40
 Dust Shot, 25-b bag.....2.00
 Dust Shot 5-b bag.....45%
 In ton lots a 5-b bag is made of (25-b) and 2 1/2-b bags for cash.

Shovels and Spades—
 Ames' Shovels, Spades, &c., list Nov. 1, 1885 (Except Nos. named below).....20%
 The following Nos. are subject to a discount of 27 1/2%: Nos. 548 to 572; 838 to 880; and Nos. 1004, 1009, 1014, 1018, 1024, 1027 and 1029.

Griffith's Black Iron.....50% to 10%
 Griffith's C. S.....60% to 60% to 5%
 Griffith's Solid C. S. R. Goods.....20%
 Hubbard & Co., Antrim list.....25%
 Hubbard & Co's. Chisholm Pattern.....50% to 10% to 5%
 Hussey, Blinn & Co.....10% to 25%
 H. M. Myers Co.....30%
 Lehigh Mfg. Co.....50% to 10%
 St. Louis Shovel Co.....20% to 20% to 7 1/2%
 Payne Pettibone & Son.....35% to 5%
 Remington's (Lowman's) Pat.....40% to 10% to 5%
 Rowland's Black Iron.....60% to 10% to 10% to 5%
 Rowland's Steel.....60% to 10% to 10%
 Terra Haute Shovel & Tool Co.....25%

Shovels and Tongs—
 Brass Head.....60% to 10% to 10%
 Iron Head.....60% to 10% to 10% to 5%

Sieves and Sifters—
 A. & V. Sifters.....\$ gr \$15.00
 Buffalo Metallic, S. S. & Co.....50% to 25% to 80%
 Electric Light.....\$ gr \$1.50; \$ gr \$2.00
 Hunter's Genuine, \$ doz \$1.75, \$ gr \$16.50
 Hunter's Imitation.....\$ doz \$1.75; \$ gr \$15.00

Mann's Tin Rim.....50% to 25%
 Shaker (Barber's Pat.) Flour Sifters.....\$ gr \$21.00

Sieves, Wooden Rim—
 Mesh 18, Nested, \$ doz.....\$0.80 \$1.00
 Mesh 20, Nested, \$ doz.....95 1.10
 Mesh 24, Nested, \$ doz.....1.15 1.28

Twine-

Flax twine—		EC.	B.
No. 9, $\frac{1}{4}$ and $\frac{1}{2}$ Balls		22	30
No. 12, $\frac{1}{4}$ and $\frac{1}{2}$ Balls		17	24
No. 18, $\frac{1}{4}$ and $\frac{1}{2}$ Balls		17	20
No. 24, $\frac{1}{4}$ and $\frac{1}{2}$ Balls		17	20
No. 36, $\frac{1}{4}$ and $\frac{1}{2}$ Balls		16	20
Chalk Line, Cotton, $\frac{1}{4}$ Balls			17
Cotton Mocs, 9, 12, 15 & 18 to doz.		55	61 75
Cotton Wrapping, 5 Balls to a		18	61 15
2-Ply Hemp, $\frac{1}{4}$ and $\frac{1}{2}$ Balls (Spring twine)		10	61 15
3-Ply Hemp, $\frac{1}{4}$ Balls		10	61 15
3-Ply Hemp, $\frac{1}{2}$ Balls			10
2, 3, 4 and 5 Ply Jute, $\frac{1}{4}$ Balls			5
Mason Line, Linen, $\frac{1}{4}$ Balls			54
No. 204 Mattress, $\frac{1}{4}$ and $\frac{1}{2}$ Balls		52	54 15
Wool		10	61 15
Wool		5	61 15

Wises—
Solid Box

Parallel—

Backus and Union.....	40%
Bonney's.....	50%
Double Screw Leg.....	15&10%
Fisher & Norris Double Screw.....	15&10%
Holland's.....	35@40%

Howard's.....
Massey Quick Action.....

Merrill's.....	15@20%
Millers' Falls.....	40@40&10%
Moore's.....	20%
Parker's.....	20@25%
Prentiss.....	20@25%
Sargent's.....	70&10%
Simpson's Adjustable.....	40%

Stephens'
Trenton

Wilson's..... 55%

Saw Filers—

Bonney's, Nos. 2 & 3, \$15.00.... 40&10@50%

Economy, # doz., Nos. 110, \$10.00; 120,
\$15.00..... 60&10&10&5%

Hopkins'..... # doz \$17.50, 10%
D..... 10%

Reading.....
Stearns' Common, Nos. 0, 1

Stearns' Rubber Jaw, Nos. 10 & 33.85	10%
Wentworth.....	20&10%
Miscellaneous—	
Bauer's Pipe Vises.....	10%
Cincinnati.....	25&10%
Cowell Hand Vises.....	20%
Enterprise Pipe Vises..... each \$3.00	40%

Massey Combination Pipe Vises
Phoenix Vises

Wads—Price Per M.
U.M.C.&W.R.A.—B. E., 11 up.. 68¢
U.M.C.&W.R.A.—B. E., 9&10.. 82¢
U.M.C.&W.R.A.—B. E., 8..... 96¢

U.M.C.&W.R.A.—B. E., 7....
U.M.C.&W.R.A.—P. E., 11 up

U.M.C.&W.R.A.—P. E., 9&10..	1.50	Dis.
U.M.C.&W.R.A.—P. E., 8.....	1.70	
U.M.C.&W.R.A.—P. E., 7.....	1.80	
Eley's B. E., 11 and larger....	\$1.70@	\$1.75
Eley's P. E., 12 to 20.....	\$3.00@	\$3.25

Wagon Boxes—

See Boxes, Wagon.
Wagon Jacks—

See Jacks, Wagon.
Ware, Hollow—
Cast Iron, Hollow
 Stove Hollow-Ware—
 Ground ... 60&10@60&10&10
 Unground.....65&10@70&5

Gray Enameled Ware—
Stove.....

Maslin Kettles..... 80 & 10 @ 80 & 10 & 10 %
 Boilers and Saucepans... 40 @ 50 @ 40 & 10 %
 White Enamelled Ware—
 Maslin Kettles..... 70 & 10 @ 75 & 5 %
 Boilers and Saucepans ... 60 @ 60 & 10 %
 Rustless Hollow Ware ... 50 @ 50 & 10 %
 Tinned Boilers and Spans ... 80 @ 60 & 10 %

Enameled-

Agate and Granite ware, list Jan. 1,
1884 25%
Ironclad Enameled Ware, Old list.... 50&10%

Kettles—
Galvanized Tea-Kettles—
Inch..... 6 7 8 9

Each...55¢ 60¢ 65¢
Steel Hollow V

Avery Spiders and Griddles	60@70%
Avery Kettles.....	60&10&10@70&10%
Standard Fiber—	
	Per Doz.
	Plain. Decorated
Cuspidors.....	\$7.50
Ball-nick Mugs.....	\$3.00

Half-peck measure.....	\$1.0
Peck Measure.....	3.5
Peck Measure.....	3.5

Keelers, 11½ in.....	3.00
Spittoons, "Daisy," 8 in.	4.00
Wash-Basins, 10½ in....	2.00
Wash-Basins, 12 in.....	2.50

See also Pails.

Indurated Fiber.--
 Basins, Ringed, 4 doz., No. 2....2.80)

Butter Bowls 15, 17 and 19
pieces), 7 nest.....

Keelers Nested, Nos. 1, 2, 3 and 4 (4 pieces), $\frac{1}{2}$ nest.....	\$2.55
Liquid Measures, pt., qt., 2 qt. and funnell (4 pieces), $\frac{1}{2}$ set.....	\$1.20
Spittoons No. 2, $\frac{1}{2}$ doz.....	\$6.00
Washtubs, Nested, Nos. 0, 1, 2, and 3 (4 pieces), $\frac{1}{2}$ nest.....	\$5.75

See also Pails.
Silver Plated. H.

4 mo. or 5 % cash in 30 days.

Meriden Britannia Co.....	} 40&5
Reed & Barton.....	
Rogers & Brother.....	
Simpson, Hall, Miller & Co....	
Hartford Silver Plate Co.....	} 40&5&51
William Rogers & Co.....	

Washers--

Size hole..... 5-18 9¢ 3¢ 5¢ to 1¢
Washers..... 5¢ 4¢ 3¢ 2¢
In lots less than 200m, 3 m, add 1¢, 5-9
boxes 1¢ to list.
Washer Cutters—
See Cutters, Washers.
Water Coolers—

Water Coolers—
See Coolers, Water.

Wedges—
 Iron..... \$ 24 @ 22¢
 Steel..... \$ 24 @ 34¢
Weights Sash—
 Ton lots at foundry, \$ ten, \$15.00 \$16.00
Well Buckets Galvan—

MAY 16, 1894.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market report.

Wrought Scrap Iron.....	3	gross ton	\$9.00
Heavy Cast Scrap.....	3	gross ton	7.00
Stove Plate Scrap.....	3	gross ton	4.50

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